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EXAMINING THE RELATIONSHIP BETWEEN CLINICAL JUDGMENT AND NURSING ACTION IN BACCALAUREATE NURSING STUDENTS

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Dedication

I would like to dedicate this dissertation to my family. First and foremost to my husband, Marty. It is impossible to convey how blessed and grateful I am to have you in my life and to call you my husband. Thank you for always believing in me and loving me; I know it was not easy these past three years. To my parents, John and Camille. Thank you for instilling in me the importance of hard work, discipline, and perseverance. I hope that one day, I will be able to impart these same attributes to my own children. Thank you for being my encouragement, and stepping in to help with childcare whenever needed. To my father and mother in-law, Dave and Benia. Thank you for always being there for me and for jumping at the opportunity to babysit and do what you could to help. I would not have been able to do it without you. I also want to dedicate this dissertation to Grandpa Stuedemann. Thank you for being a constant presence and unspoken support throughout this journey. Last, to my children. I hope that this may inspire you to chase your dreams and never give up.

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Andrea Lauren Fedko

EXAMINING THE RELATIONSHIP BETWEEN CLINICAL JUDGMENT AND NURSING ACTION IN BACCALAUREATE NURSING STUDENTS

Clinical judgment provides the basis for nurses' actions and is essential for the provision of safe nursing care. Tanner's Clinical Judgment Model and its associated instrument, the Lasater Clinical Judgment Rubric (LCJR) have been used in the discipline of nursing, yet it is unclear if scores on the rubric actually translate to the completion of an indicated nursing action. This is important because clinical judgment involves identifying and responding to patient situations through nursing action, and then evaluation of such actions. The purpose of this observational study was to explore the relationship between clinical judgment, as measured by the LCJR, and the completion of an indicated nursing action, as measured by a nursing action form.

The clinical judgment and completion of an indicated nursing action was measured in 92 participant students at a Midwestern university school of nursing who were enrolled in an adult medical/surgical nursing course that included simulation and debriefing during which scoring occurred. This study explored whether clinical judgment, as measured by the LCJR, was related to the completion of an indicated nursing action. In addition, this study evaluated whether *Responding*, as measured by the LCJR was related to the completion of an indicated nursing action. The data revealed that a very weak relationship was present between clinical judgment, as measured by the LCJR, and the completion of an indicated nursing action; however, these findings were not

statistically significant. The data also revealed that a very weak relationship was present between the dimension *Responding*, and the completion of an indicated nursing action; however, these findings were also not statistically significant.

This study expands upon previous clinical judgment research in nursing and identifies a need for additional methods of evaluating clinical judgment in baccalaureate nursing students including action appraisal so that deficiencies are established and targeted for improvement.

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Chapter I Introduction

Background of the Study

Clinical judgment underpins professional nursing practice and provides the basis for nurses' actions and safe patient care (AACN, 2008; Johnson et al., 2012; Tanner, 2006). Nursing scholars have proposed theories that address clinical judgment and worked toward establishing a consistent definition for the discipline (Gordon Murphy, Candee, & Hiltunen, 1994; Regan-Kubinski, 1991; Tanner, 2006). Clinical judgment in nursing is broadly described as involving noticing pertinent and non-pertinent patient cues, developing interpretations and forming hypotheses, responding through nursing action, and evaluating the actions through reflection (Gordon et al., 1994; Regan-Kubinski, 1991; Tanner, 2006). Clinical judgment is considered an essential outcome for the baccalaureate nurse graduate and is important for fulfilling the role of patient advocate as well as for designing, coordinating, and managing care (AACN, 2008).

Despite the importance of clinical judgment in the nursing discipline, it is a challenging concept to articulate and assess. The task of instructing and evaluating students' clinical judgment requires the appraisal of qualities that may not be readily observed. Clinical judgment may include students' initial grasp of a clinical situation, which is challenging to identify and observe contextually during patient care. Furthermore, the situations requiring clinical judgment are often plagued with uncertainty and ambiguity leading to the difficulty associated with conceptualization, assessment, and use (Tanner, 2006).

With nursing education, clinical judgment is often developed through the use of simulated patient scenarios (Ashcraft et al., 2013; Blum, Borglund, & Parcells, 2010; Bussard, 2015; Dillard et al., 2009; Fenske, Harris, Aebersold, & Hartman, 2013; Johnson et al., 2012; Mariani, Cantrell, Meakim, Prieto, & Dreifuerst, 2013; McMahon, 2013; Meyer, 2012; Schlairet & Fenster, 2012; Shin, Shim, Lee, & Quinn, 2014; Victor-Chmil, Turk, Adamson, & Larew, 2015; Yuan, Williams, & Man, 2014). Other environments and instructional methods for developing and assessing clinical judgment include traditional laboratory settings, didactic concept-based learning activities, grand rounds, and direct clinical experiences (Blum et al., 2010; Kantar & Alexander, 2012; Lasater & Neilsen, 2009; Mann, 2010; Meyer, 2012; Schlairet & Fenster, 2012).

Across these different environments and instructional methods, nurse educators and researchers often follow a particular theoretical framework when examining or promoting clinical judgment development. This is important for not only articulating the conceptual definition of clinical judgment, but also provides a means for the identification of deficiencies and the provision of instruction that targets students' shortcomings for further improvement. For instance, in examining the ways in which students notice pertinent cues, develop interpretations, form hypotheses, respond through action, and evaluate action, faculty can identify weaknesses in clinical judgment development (Tanner, 2006).

One way clinical judgement can be assessed in nursing students is using the Lasater Clinical Judgment Rubric (LCJR). This rubric, based on Tanner's model, provides criteria for measuring nursing student's development of clinical

judgment (Lasater, 2007). It has become a common way of operationalizing assessment of the development and attainment of this critical outcome for the baccalaureate nursing student and graduate. For these reasons, this instrument, which evaluates clinical judgment, is important to explore further.

Statement of the Problem

The LCJR is one of the commonly used instruments for evaluating students' clinical judgment (Ashcraft et al., 2013; Blum et al., 2010; Bussard, 2015; Dillard et al., 2009; Fenske et al., 2013; Johnson et al., 2012; Kantar & Alexander, 2012; Lasater, 2007; Lasater & Neilsen, 2009, Mariani, et al., 2013; Shin et al., 2014; Victor-Chmil et al., 2015; Yuan et al., 2014). Developed following the publication of the Tanner's (2006) Clinical Judgment Model, Lasater (2007) developed the LCJR to serve as a guide for nursing faculty and students to discuss clinical judgment. Nursing researchers have also utilized the LCJR as an instrument for quantifying and assessing clinical judgment development (Fenske et al., 2013; Johnson et al., 2012; Lasater & Nielsen, 2009; Mariani et al., 2013; Schlairet & Fenster, 2012).

Theoretically driven by Tanner's (2006) Clinical Judgment Model, the LCJR consists of four dimensions: *Noticing, Interpreting, Responding,* and *Reflecting* (Lasater, 2007). Based on the four dimensions, eleven items on the rubric provide a means for evaluating clinical judgment based on students' "focused observation, recognizing deviations from expected patterns, information seeking, prioritizing data, making sense of data, calm, confident manner, clear

communication, well-planned intervention/flexibility, being skillful, evaluation/self-analysis, and commitment to improvement" (Lasater, 2007, p. 500-501).

Although Lasater developed the rubric from Tanner's (2006) clinical judgment model, it is not clear if the *Responding* dimension actually reflects the completion of an action as Tanner described it. Specifically, a problem exists in the way that nursing researchers have used the LCJR to measure the aspect of *Responding* on the basis of confidence levels, communication ability, flexibility, and skillfulness, rather than appraising the student's action (Lasater, 2007). While each of the items provide insight regarding student responses, the completion of these items does not necessarily equate to the actual completion of an indicated action. This is important because clinical judgment involves *Responding* through nursing action (after the collection and interpretation of pertinent cues), and evaluating the action that occurred (Gordon et al., 1994; Regan-Kubinski, 1991; Tanner, 2006). This gap represents a problem because nursing researchers frequently use the LCJR as a way of determining the effectiveness of applied actions (Ashcraft et al., 2013; Blum et al., 2010; Fenske et al., 2013). While nursing theorists have included action as a large component of clinical judgment in nursing, it is unclear if action is measured by the LCJR (Gordon et al., 1994; Regan-Kubinski, 1991; Tanner, 2006).

Nursing faculty and researchers' current evaluations of students' clinical judgment using the LCJR are then problematic because it is unclear if the action is measured (Ashcraft et al., 2013; Blum et al., 2010; Bussard, 2015; Coram, 2016; Dillard et al., 2009; Fenske et al., 2013; Johnson et al., 2012; Kantar &

Alexander, 2012; Lasater, 2007; Lasater et al., 2014; Lasater & Nielsen, 2009; Mann, 2010; Mariani et al., 2013; McMahon, 2013). As a result, nursing faculty and researchers' conclusions drawn from LCJR scores may be inaccurately high or misleading based on the lack of clarity surrounding action appraisal in the rubric.

Purpose of the Study

The purpose of this research study was to explore the relationship between clinical judgment, as measured by the LCJR, and the completion of an indicated nursing action by seventh and eighth semester traditional prelicensure baccalaureate nursing students during a high-fidelity simulation.

Significance of the Study

Clinical judgment impacts the health and well being of many patients by aiding in the provision of safe and evidence-based nursing care, especially in the ways nurses notice, interpret, respond, and reflect on patient situations (Johnson et al., 2012; Standing, 2008; Tanner, 2006). Therefore, faculty and researchers must thoroughly evaluate nursing students' clinical judgment prior to independent practice. The way in which faculty and researchers use the LCJR to evaluate students' clinical judgment is limited because the LCJR does not examine the completion of an indicated nursing action. Without examining the action that nursing students complete, it is possible that students may exhibit satisfactory or above satisfactory clinical judgment, as measured by the LCJR, but not complete the indicated nursing action for the situation. This study is important because it

positioned the assessment of clinical judgment in the context of nursing action for the discipline. Examining clinical judgment using this approach aligns the way in which students notice and interpret clinical situations with how they respond to them. This ensures that the necessary care was not only determined by nursing faculty and researchers, but also completed. This study provides faculty and researchers with a way of investigating clinical judgment using the LCJR, and the completion of an indicated nursing action.

Definition of Terms

To provide further clarity, this section includes the definitions of clinical judgment and nursing action that the researcher used for this study.

Clinical judgment. Clinical judgment was defined as noticing pertinent and non-pertinent patient cues, developing interpretations and forming hypotheses, responding through nursing action, and evaluating the actions that occurred through reflection (Gordon et al., 1994; Regan-Kubinski, 1994; Tanner, 2006). It includes higher-order thinking and concludes by reflecting upon the action that was completed.

Nursing action. Nursing action was defined as the observable motor skill that was indicated during a high fidelity simulation. The researcher initially chose the indicated nursing action for each high fidelity simulation based on the premise that it was a patient quality or safety issue that only required a simple action to correct. However, as the study progressed, the researcher adjusted indicated action for some of the high fidelity simulations based on faculty

preference at the participating school of nursing. In this study, the researcher measured nursing actions using a Nursing Action Form (NAF) described in Chapter III.

Theoretical Framework

The theoretical framework proposed by Tanner (2006) addresses the clinical judgment process that nurses follow during rapidly changing clinical situations. Tanner (2006) began construction of this framework following a robust review of the clinical judgment literature in nursing and resulted in the development of a Clinical Judgment Model. Within this framework, Tanner defined clinical judgment as the "interpretation or conclusion about a patient's needs, concerns, or health problems, and/or the decision to take action (or not), use or modify standard approaches, or improvise new ones as deemed appropriate by the patient's response" (p. 204). Based this definition, Tanner developed a Clinical Judgment Model that consists of four aspects including *Noticing, Interpreting, Responding* and *Reflecting*. Together, the four aspects represent the clinical judgment process of nurses across a variety of specialties and served as the theoretical framework for this study.

Tanner's (2006) framework clearly defines four aspects of nurses' clinical judgment. Gathering patient data contributes to nurses' overall expectations and initial grasp of a situation and encompasses *Noticing* (Tanner, 2006). Once *Noticing* has taken place, the process of *Interpreting* ensues. Using analytic, narrative, or intuitive reasoning patterns, nurses form interpretations and decide upon a course of action. During *Responding*, Tanner explained that an

"appropriate course of action" is completed based upon the conclusions from the previous two aspects (Tanner, 2006, p. 208). Last, *Reflecting* on action and in-action constitutes the final and largest portion of the Clinical Judgment Model. During *Reflecting*, nurses review the success of the action that was completed and make adjustments based on the expected outcomes of the situation (Tanner, 2006).

Tanner's (2006) Clinical Judgment Model provides a more simplistic version of previous theories proposed by Gordon et al. (1994) and Regan-Kubinski (1991), and is applicable to a wider range of nursing specialties. Nursing researchers support Tanner's (2006) Clinical Judgment Model and often measure it through the use of the LCJR (Ashcraft et al., 2013; Lasater & Nielsen, 2009; Standing, 2008).

One gap in this framework, however, exists in the cyclical nature of the Clinical Judgment Model (Tanner, 2006). Tanner (2006) proposed that the four aspects in the model are closely interrelated thus making it difficult for faculty and researchers to articulate when one clinical judgment ends and another occurs. Although *Reflecting* represents the conclusion of the clinical judgment process, reflections that occur during this time present implications on the *Noticing*, *Interpreting*, and *Responding* that had previously transpired. Specifically, *Reflecting* affects the previous stages in the way in which nurses use the knowledge gained during reflection and apply that knowledge to future patient situations. Nurses may thus reevaluate the presenting patient cues or reinterpret the same situation several times during the process.

The theoretical framework presented by Tanner (2006) heavily emphasizes nurses' completed actions in the clinical judgment process. Specifically, Tanner described the aspects of *Noticing* and *Interpreting* as important for the selection of an "appropriate" action (p. 204). In addition, the completion of an "appropriate" action comprises a large piece of the aspect of *Responding* so as to ensure that expected patient outcomes are met through the completion of an indicated nursing action (Tanner, 2006, p. 204). Furthermore, the aspect of *Reflecting* occurs only once action or inaction occurred. Reflecting in and on the action, or inaction, that transpired helps faculty and researchers evaluate whether the expected patient outcomes were met, and contributes to students' further clinical judgment growth. In this way, nursing faculty and researchers may consistently and effectively ensure that students noticed, interpreted, and responded to patient situations (Tanner, 2006).

Research Questions

This study explored the relationship between traditional prelicensure baccalaureate nursing students' clinical judgment, as measured by the Lasater (2007) Clinical Judgment Rubric, and the completion of an indicated nursing action. This study investigated the following research questions:

Is there a relationship between clinical judgment, as measured by the LCJR, and the completion of an indicated nursing action, as measured by the NAF, among seventh and eighth semester traditional prelicensure baccalaureate nursing students during a high fidelity simulation?

Is there a relationship between the dimension *Responding*, on the LCJR, and the completion of an indicated nursing action, as measured by the NAF, among seventh and eighth semester traditional prelicensure baccalaureate nursing students during a high fidelity simulation?

Assumptions

This study had the following assumptions: (a) the study participants would respond to the high fidelity simulation to the best of their knowledge; (b) the study participants would have been previously educated on the clinical concepts present in the high fidelity simulation and (c) the study participants would have previously been oriented to the use of high fidelity simulation.

Organization of the Study

This study is described across five chapters. In Chapter I, study information such as the background, statement of the problem, purpose of the study, significance, definition of terms, theoretical framework, research questions, and assumptions were presented. Chapter II consists of the literature review, along with discussions of clinical judgment in medicine and allied health, clinical judgment in nursing, research using the LCJR and implications of clinical judgment research that used the LCJR. Chapter III presents the study methods such as the selection of participants, instrumentation, data collection, and the research questions and hypotheses. Chapter IV provides the study findings including the statistical steps taken to achieve the study results. Finally, Chapter

V provides a summary of the study, discusses the findings, the implications for practice, and recommendations for further clinical judgment research.

Chapter II Review of the Literature

Introduction

Clinical judgment is crucial to the discipline of nursing because it serves as the basis for professional nursing practice (AACN, 2008; Tanner, 2006). Clinical judgment is the way in which nurses notice patient cues, develop interpretations, respond through action, and then evaluate the action (Gordon et al., 1994; Regan-Kubinski, 1991; Tanner, 2006). In order for nursing faculty and researchers to comprehensively evaluate nursing students' clinical judgment, assessment of completion of the indicated action must also occur.

Investigations of prelicensure nursing students' clinical judgment and completed actions are scarce. A tendency exists within the discipline of nursing to appraise prelicensure students' clinical judgment without consistently considering the completion of an indicated nursing action. This type of appraisal is often based on the assumption that clinical judgment assessment implicitly takes into account the completion of an indicated action. However, based on the literature, it is unclear if this assumption is warranted. Most nursing theorists have identified action as integral to clinical judgment (Gordon et al., 1994; Regan-Kubinski, 1991; Tanner, 2006). Despite this, one of the most commonly used clinical judgment instruments within the discipline, the Lasater Clinical Judgment Rubric (LCJR), does not include action as a measurable dimension of clinical judgment (Lasater, 2007). Omitting assessment of completed action creates challenges for determining whether clinical judgment is truly present in nursing students. Therefore, this study addressed the completion of an indicated

nursing action by nursing students in the context of evaluating their clinical judgment.

This chapter presents literature relevant to this research study in three sections: (a) clinical judgment in medicine and allied health, (b) clinical judgment in nursing, and (c) research using the LCJR.

Clinical Judgment in Medicine and Allied Health

The disciplines of Medicine and allied health have defined clinical judgment as creating a differential in which diagnoses are acted upon to achieve a desired response (Bergeron, 2006; Vasko et al., 2013). In this manner, clinicians' investigations of clinical judgment often result from examining whether students performed the correct action in the context of diagnosing and determining patient care. For example, Bergeron (2006) supported the use of clinical judgment to help in completing the correct action of taking a patient to the operating room without imaging for possible acute appendicitis versus observing the patient and following them clinically. Bergeron's study relied heavily on the clinicians' clinical judgment in the setting of action. The author compared the action of going to the operating room to observing the patient, evaluated the outcomes of these two actions. As means of evaluating clinical judgment, Bergeron specifically investigated which action led to the outcome of increased complications. Therefore, Bergeron's (2006) study demonstrates an evaluation of clinical judgment based on action and patient outcome.

In another study, Vasko et al. (2013) discovered improved accuracy of over-hydration therapy in the care of hemodialysis patients when clinicians relied on clinical judgment ($p < 0.05$). The authors investigated three different ways in which overhydration could be assessed in hemodialysis patients. One of the three methods involved the physician's clinical judgment. Clinical judgment in this case was based on the history of the physician's action and physical exam to determine the outcome of if the patient was overhydrated. Vasko et al.'s study, like Bergeron's (2006), looked at the clinician's action of clinical assessment and to determine clinical judgment outcomes related to action.

Bloom, Zyzanski, Kelley, Tapolyai and Stange (2002) evaluated clinical judgment in the setting of respiratory tract infections. Specifically, the author looked at the action of a physician's clinical assessment and the outcome of viral versus bacterial pneumonia. Outcome data was based on culture results from various orifices as well as serum. The physician's clinical assessment and action of whether or not to treat for viral versus bacterial pneumonia was evaluated. This action was then compared to culture outcomes, which determined clinical judgment. Bloom et al. (2002) used the same action as Bergeron (2006) and Vasko et al. (2013). Bloom et al. (2002) also used the combination of action and outcome data in order to determine clinical judgment as was similar in the prior researcher studies.

Corresponding to the studies by Bergeron (2006), Vasko et al. (2013), and Bloom et al. (2001), Lee et al. (2014) also examined clinical judgment based on action and outcome evaluation. However, Lee et al.'s study differs from Vasko et

al. (2013), Bergeron (2006), and Bloom et al. (2002) in that the authors evaluated cardiology fellows rather than post residency trained physicians. Lee et al. assessed cardiology fellows and their clinical judgment in determining myocardial ischemia by history and physical examination with and without the patient's BNP values. The action was similar to the Vasko et al. (2013) study in that Lee et al. (2014) used the physicians' clinical assessment as an indicator of clinical judgment. The outcome in Lee et al.'s study was centered on whether the patient truly had myocardial ischemia either based on stress test or coronary angiography. The authors found that when cardiology fellows had access to BNP values, the clinical judgment to determine myocardial ischemic improved based on the outcomes of the stress test.

These studies illustrate the ways in which researchers have examined how physicians and clinicians in medicine and allied health evaluate clinical judgment. The researchers used action and outcomes in determining clinical judgment. However, this is not the only field in medicine and allied health that evaluates clinical judgment in this manner. Researchers in social work and psychology have also defined clinical judgment similarly (Bierman, Nix, Maples, & Murphy, 2006; Rosenthal, 2004).

Bierman, Nix, Maples, and Murphy (2006) examined clinical judgment related to visits to a home for aggressive-disruptive children. The authors measured the action of tailoring the frequency of home visits depending on the family coordinators evaluation of the situation. The outcome was the parental analysis of the impact of the visits that was evaluated based on the effectiveness

of clinical judgment that resulted from the coordinator's action (Bierman et al., 2006).

Similarly to Bierman et al. (2006), Rosenthal (2004) investigated clinical judgment in the setting of race amongst vocational rehabilitation counselors. Rosenthal measured the action of demonstrating bias in general evaluations, perception of psychopathology, and estimates of the education and vocational potential of African American clients (Rosenthal, 2004). The evaluated outcome was the overall judgment based on limited information given to the counselors regarding the African American patients versus European American clients. Just as in Bierman et al. (2006), Rosenthal (2004) examined clinical judgment in terms of patient outcomes resulting from counselors' actions. These two studies, one looking at counselors and the other on family coordinators in psychology demonstrate that regardless of the field, medicine or allied health professions, researchers defined clinical judgment similarly. These studies also demonstrate that whether the research is related to physicians, psychologists, counselors, students, or post-residency trained physicians, researchers apply the same definition of clinical judgment.

The findings of the research studies in which clinical judgment is evaluated demonstrate a tendency for medicine and allied health researchers to place importance upon action and outcome. The importance of these two concepts are underscored by the implication that clinical judgment was based upon whether an action met a particular outcome. If a particular outcome was achieved, the researchers identified participant as having better clinical judgment

when compared to other participants. Therefore, action is heavily influenced by an individual's clinical judgment. Action can arguably be the most critical element to clinical judgment. Critics of the research presented would argue however that these studies were not necessarily conducted in the educational or teaching realm but instead by practicing clinicians. While this may be true for some of the research, Lee et al. (2014) evaluated fellows in cardiology who were currently in training albeit in clinical settings with real patients. This is similar to the way in which researchers have often examined clinical judgment in nursing education among students who are also in the midst of training and have yet to practice independently as registered nurses.

Clinical Judgment in Nursing

Theory guides how clinical judgment is articulated and measured in research and practice within the nursing discipline. This differs from the work in medicine and allied health where a theoretical framework is not articulated nor followed when defining or examining clinical judgment (Bergeron, 2006; Bierman, 2006; Bloom et al. 2001; Lee et al., 2014; Rosenthal, 2004; Vasko et al., 2013). However, within the disciplines of medicine and allied health, the relationship between clinical judgment and action are implied throughout the literature. Within nursing however, clinical judgment theory is commonly present in the research designs.

Examples of theoretical models of clinical judgment in nursing include the Regan-Kubinski (1991) Model of Clinical Judgment, Gordon et al.'s (1994)

Integrated Clinical Judgment Model, and Tanner's (2006) Clinical Judgment Model. Of these models, nursing researchers utilize Regan-Kubinski's (1991) and Gordon et al.'s (1994) models the least often. The infrequent utilization of these models may be because of the challenge of operationalizing evaluating, and using them. However, nursing researchers frequently apply Tanner's (2006) Clinical Judgment Model to underpin their studies or refer to it through the use of an associated instrument, the LCJR (Lasater, 2007). Each of the three nursing theories and the LCJR as they inform the discipline about clinical judgment are reviewed next.

The Regan-Kubinski Model of Clinical Judgment

The Regan-Kubinski Model of Clinical Judgment (1991) describes the clinical judgment of psychiatric nurses. Following a grounded theory approach, Regan-Kubinski (1991) conducted 36 interviews of 15 psychiatric nurses and gathered information surrounding their clinical judgments. From this work, Regan-Kubinski (1991) took the position that nurses' judgments led to nursing actions. In this model, clinical judgment is preceded by six steps including setting up from initial cues, framing, pivotal cue, hypothesis testing, conclusions, and nursing action. Regan-Kubinski (1991) proposed that clinical judgment was initiated when nurses "set up" the clinical situation by collecting cues that were descriptive of patients' behavior (p. 265). Depending upon the specific collected cues, nurses then framed the situation using prior experiences and personal knowledge (Regan-Kubinski, 1991). After framing the situation, nurses then choose a pivotal cue and initiated interpretations of it. Following the identification

of the pivotal cue, nurses tested their hypotheses by gathering additional patient cues in an effort to further substantiate or refute their interpretations. After testing their hypotheses, the crux of clinical judgment occurred when nurses reached a conclusion and took action (Regan-Kubinski, 1991). This model of clinical judgment has not been widely used by faculty or researchers in nursing and nursing education. However, following the publication of the Regan-Kubinski (1991) model, further development of the concept of clinical judgment did occur in the form of the Integrated Clinical Judgment Model (Gordon et al., 1994). As a result, these models have several similarities.

The Integrated Clinical Judgment Model

In 1994, Gordon et al. devised the Integrated Clinical judgment Model based on the assumption that clinical judgment is multifaceted and primarily involves diagnostic, ethical, and therapeutic dimensions. Various nursing specialties contributed to the development of this model. In this model, Gordon et al. reported that clinical judgment was rarely based on diagnostic values alone. In other words, nurses' clinical judgment involves a combination of objective data and individual beliefs and opinions.

In the Integrated Clinical Judgment Model, ethical judgment involves the "scope of assessments, nursing diagnoses, caregiving, and appraisals based upon nurses' beliefs and philosophic values" (Gordon et al., 1994, p. 67). Therapeutic judgment includes prioritizing, problem solving, projecting patient outcomes, and selecting interventions based on patient information and cues. Finally, diagnostic judgment involves "knowledge and skill in the use of

diagnostic concepts and criteria, sensitivity of cues, and ability to assess health patterns" (Gordon et al., 1994, p. 64).

Taking into account the ethical, therapeutic, and diagnostic dimensions, the Gordon et al. (1994) described a "generic process" that encompasses components of information collection and interpretation, problem identification, plans for problem solving, implementation of the plan, and evaluation (p. 64). The authors proposed that nurses make diagnostic, ethical, and therapeutic judgments during each of the five generic processes within the model.

In the first process, called information collection and interpretation, nurses make diagnostic judgments during "functional health pattern assessments" (Gordon et al., 1994, p. 60). Simultaneously, nurses make ethical judgments of the information they collect based on the patients' and their own individual morals. During the second generic process, called problem identification, nurses exhibit diagnostic judgment when a nursing diagnosis is hypothesized (Gordon et al., 1994). Ethical judgment also influences nursing diagnoses through the impression of patients' reliability and validity as a historian. In the third generic process, called plan for problem solving, diagnostic judgment transitions to therapeutic judgment and involves prioritizing problems, developing interventions, and projecting patient outcomes. Ethical judgment also influences this third process by including prioritization of patient claims and the development of an action plan. The fourth generic process, implementation, involves both nursing action as a part of therapeutic judgment and moral action as part of ethical judgment. Gordon et al. specifically highlighted the importance of this

step, describing it as a test of clinical judgment adequacy (Gordon et al., 1994, p. 67). This process, along with information collection and interpretation, results in a nurse-patient interaction that heavily influences nursing action. The fifth and last generic process, evaluation, addresses outcome evaluation as a component of therapeutic judgment and moral evaluation as a component of ethical reasoning. Evaluating the outcomes of the implemented action occurs through the observation of behavior, which acts as a final check of clinical judgment efficacy.

Although nursing researchers and clinicians make limited use of this model, Gordon et al. (1994) suggested that the Integrated Model of Clinical Judgment be used as a method of analyzing patient data and as a guide for evaluating clinical judgment in practicing nurses or in the educational realm. In addition, Gordon et al. recommended using the model for research into clinical judgment in nursing, and as a method for structuring nursing education practices or evaluating course outcomes. The complexity of the Integrated Model of Clinical Judgment as compared to other models, and a lack of a rubric based on the model, may have contributed to the lack of reported use thus far in nursing education research.

Tanner's Clinical Judgment Model

Despite the work of Regan-Kubinski (1991) and Gordon et al. (1994), it was not until the framework laid out by Tanner (2006),that clinical judgment in nursing began to be of serious interest to the discipline. Prior to this, researchers focused more on critical thinking and decision-making (Botes, 2000; Girot, 2000;

Hicks, Merritt, & Elstein, 2003; Hoffman, Donoghue, & Duffield, 2004; Mogale, 2000; Tiwari, Lai, So, & Yuen, 2006). In her model, Tanner (2006) identified four aspects of clinical judgment including: *Noticing*, *Interpreting*, *Responding*, and *Reflecting*.

The *Noticing* aspect of clinical judgment occurs when nurses look for pertinent cues during patient encounters and physical assessments (Bussard, 2014; Cato, Lasater, & Peeples, 2009; Tanner, 2006). For instance, in an annual examination of a patient, a nurse notices that he or she makes statements regarding compliance with medications as well as the edema of his or her lower extremities when speaking with or examining the patient. After nurses collect pertinent and non-pertinent cues, *Interpreting* occurs in the form of developing hypotheses using a variety of reasoning patterns (Tanner, 2006). These hypotheses are similar to nursing diagnoses from the nursing process. As discussed earlier, this is similar to the way medicine and allied health define clinical judgment. Then, *Responding* occurs when nurses act (or do not act) upon the formulated hypotheses. For example, in a patient requiring an intravenous bolus of an anticoagulant, *Responding* would occur when an action such as verification with a second nurse of the intravenous bolus dosage was completed. Tanner's model ends with *Reflecting* in and on action. Nurses' responses are deemed "appropriate" by reflecting upon the outcome of the nursing action (Tanner, 2006, p. 208). Therefore, in the patient requiring an intravenous bolus of an anticoagulant, reflecting upon the administered dosage

of the anticoagulant in relation to the patient's coordinating laboratory values or dissolution of a blood clot would demonstrate an "appropriate" outcome.

Comparing and Contrasting Among Clinical Judgment Models in Nursing

Tanner (2006), Gordon et al. (1994), and Regan-Kubinski (1991) consistently identified aspects of clinical judgment related to *observation*, *hypothesizing*, and *action*. In Tanner's (2006) model, *Noticing* was described as a form of observation. During *Noticing*, nurses observe deviations in norms or the anticipated patient responses (Tanner, 2006). Gordon et al. (1994) similarly described observation in a discussion of the generic process of information collection and problem identification. This process is part of functional health pattern assessments in Gordon et al.'s model. Finally, Regan-Kubinski (1991) discussed observing but do so by describing the process as "setting up" while obtaining initial cues (p. 265).

Hypothesis generation is another similarity among the three models. Gordon et al. (1994) proposes that relevant hypotheses drive the development of nurses' problem solving plans. Regan-Kubinski (1991) also discussed how hypothesis generation occurs following the identification of a pivotal cue. Nurses then test a hypothesis that would help them reach a conclusion and take action. Tanner (2006) also stated that the understanding of patient cues contribute to nurses' interpretations of a situation and development of hypotheses. Regan-Kubinski (1991), Gordon et al. (1994), and Tanner (2006) also identify patient relationships as important to clinical judgment in terms of feedback and how this is used in influencing nurses' actions and determining outcomes.

Tanner (2006), Gordon et al. (1994), and Regan-Kubinski (1991) also identified *action* within their clinical judgment models. Across these models, the researchers described action as the means by which expected outcomes were achieved. This similarity is of particular significance because it is not only the means by which expected outcomes are achieved, but is also consistently present amongst clinical judgment definitions, models, and theoretical framework both in nursing education and in the medicine and allied health professional literature. Gordon et al. specifically highlighted this point and described it as an important test of clinical judgment adequacy.

While similarities exist between the models, differences are also present. For example, two of the models include a checks-and-balances aspect of clinical judgment described by Tanner (2006) as *Reflecting*, and by Gordon et al. (1994) as *evaluating*. In the Clinical Judgment Model, Tanner (2006) described reflection *on* and *in* action while the Regan-Kubinski (1991) model does not include a check-and-balance aspect. *Reflection* comprises a large portion of Tanner's (2006) model in which nurses adjust actions based on patient responses. This checks-and-balance portion of Tanner's (2006) model is important as it demonstrates nurses' knowledge of an unfolding situation and contributes to further knowledge development. In the Integrated Model of Clinical Judgment, Gordon et al. (1994) included the evaluation of behavioral choices as the final check in the clinical judgment process. Although Gordon et al.'s described a checks-and-balances aspect of clinical judgment differently than Tanner, it is important to note that both models identify these aspects as a

means for assessing the efficacy of nursing action. In addition, Gordon et al. (1994) similarly pointed to the evaluation of behavioral choices as a means for further refining and building upon nursing knowledge and skills. Despite the difference in terminology between the two models, the inclusion of aspects in which nursing actions are checked and balanced suggests that this is an important characteristic of clinical judgment. Not only is clinical judgment necessary for the determination of action, but also as a demonstration of and contributor to nursing knowledge.

Another difference between models is the population from which the theorists developed them. Specifically, Regan-Kubinski (1991) developed a model based on the clinical judgment of psychiatric nurses while Tanner (2006) and Gordon et al. (1994) grounded their model on the clinical judgment of nurses across a variety of specialties. This difference is important because Tanner (2006) and Gordon et al. (1994) recommended using their models for understanding the clinical judgment across a wider population of nurses rather than a specific subset.

The Integrated Model of Clinical Judgment, the Regan-Kubinski Clinical Judgment Model, and the Clinical Judgment Model provide strong frameworks for examining clinical judgment in nursing (Gordon et al., 1994; Regan Kubinski, 1991; Tanner, 2006). However, only Tanner's (2006) model has an associated rubric for quantifying clinical judgment. The availability of an instrument that helps nurses assess clinical judgement according to Tanner's Clinical Judgment

Model (2006) may have led to it's widespread adoption within the nursing discipline.

The Lasater Clinical Judgment Rubric (LCJR)

The Lasater Clinical Judgment Rubric utilizes Tanner's (2006) four main aspects of *Noticing*, *Interpreting*, *Responding*, and *Reflecting* (Lasater, 2007). Based on these aspects, the rubric consists of 11 observable dimensions to aid faculty and students in assessing clinical judgment. Three of the dimensions are within the *Noticing* aspect, two are within *Interpreting*, four are within *Responding*, and two are within *Reflecting*. The 11 rubric dimensions provide a means for quantifying nursing students' clinical judgment.

In the rubric, Lasater (2007) quantified clinical judgment by assigning scores ranging from 1- 4 within each of the 11 observable dimensions. A score of 4 indicates *exemplary* clinical judgment, a score of 3 indicates *accomplished*, a score of 2 indicates *developing*, and a score of 1 indicates *beginning* clinical judgment (Lasater, 2007). Total LCJR scores range from 11- 44 with higher scores indicating *accomplished* to *exemplary* clinical judgment.

Lasater (2007) developed the LCJR based on Tanner's Clinical Judgment Model (2006) as a means for quantifying and fostering discussions surrounding clinical judgment between nursing faculty and students. However, in most research studies, researchers use the LCJR as a measure of clinical judgment in nursing students instead. With development of this instrument, most nursing researchers used the rubric as a consistent way for nursing faculty and researchers to measure and evaluate clinical judgment. When this occurs, these

studies should be examined closely because researchers used the LCJR for purposes beyond Lasater's (2007) original intent.

In order for the LCJR to be successfully applied in nursing research, reliability in its application is crucial. Specifically, consistent inter-rater reliability through multiple raters who are trained at its use is essential to effective application of the rubric. This is a component that must be examined when evaluating its use in nursing research.

Another component that should be evaluated when using the LCJR in the setting of evaluating clinical judgment in nursing students is action. If faculty and researchers use the LCJR to measure clinical judgment rather than the way Lasater (2007) had intended it to be used to quantify and foster discussion about clinical judgment between nursing faculty and students, then action should be measured as well. As stated earlier, Lasater developed the LCJR based on Tanner's (2006) model. In Tanner's (2006) Clinical Judgment Model, action is specifically discussed within one of the aspects, *Responding*. The *Responding* aspect of Tanner's model correlates to the LCJR's *Responding* dimension. When investigating this dimension in the LCJR however, it is unclear if the rubric also measures action. To further examine this issue, a literature search was conducted to examine the use of the LCJR in nursing research studies.

Research Using the Lasater Clinical Judgment Rubric

Several databases were used to search clinical judgment in the literature including OVID, CINAHL, PubMed and Google Scholar. The search terms included: clinical judgment, clinical judgment rubric, and nursing. An initial

search of the literature yielded a possible 7,121 results. After eliminating duplicates and non-relevant studies (those that did not utilize the LCJR for measuring clinical judgment), abstracts of 329 (4.6%) the remaining articles were read in order to determine eligibility. A total of 18 articles were read based on the inclusion criteria of being a research study utilizing the LCJR, measuring clinical judgment, written in the English language, and published between 2007-2016 (Lasater, 2007).

Specific study components were examined including sample sizes, educational environment, and statistical findings (presented in Table 1 and Table 2). The 18 research studies included in this review comprised approximately 1,560 participants. Sample sizes ranged from *n* = 18 to *n* = 275. Participants' educational backgrounds were not specifically examined but varied and represented individuals who held associate degrees in nursing to those who held master's degrees in nursing.

Table 1

Studies Using the LCJR

Source	*N*	Setting
Ashcraft et al., 2013	188	Simulation
Blum et al., 2010	53	Simulation and traditional laboratory
Bussard, 2015	30	Simulation
Coram, 2016	43	Simulation
Dillard et al., 2009	25	Simulation
Fenske et al., 2013	74	Simulation
Johnson et al., 2012	94	Simulation
Kantar & Alexander, 2012	20	Didactic
Lasater et al., 2014	275	Simulation
Lasater & Nielsen, 2009	28	Concept-based learning activities
Mann, 2010	22	Grand rounds
Mariani et al., 2013	86	Simulation
McMahon, 2013	19	Simulation
Meyer, 2012	18	Simulation and didactic
Schlairet & Fenster, 2012	78	Simulation and direct clinical practice
Shin et al., 2014	250	Simulation
Victor-Chmil et al., 2015	144	Simulation
Yuan et al., 2014	113	Simulation

Table 2

Statistical Findings of Studies Using the LCJR

Source	P-Value	Findings
Ashcraft et al., 2013	$p = 0.00$	Improved performance on the LCJ over time
Blum et al., 2010	$p = 0.00$	Statistically significant difference in mean clinical competency scores on LCJR between simulated and traditional groups at midterm and final
Bussard, 2015	n/a	LCJR effective for measuring course and curriculum objectives in a high fidelity simulation
Coram, 2016	$p = 0.00$	Increase in LCJR scores following expert role modeling video
Dillard et al., 2009	n/a	LCJR effective for assessment of student clinical judgment ability
Fenske et al., 2013	$0.01 < p < 0.05$	Statistically significant difference in mean LCJR scores; statistically significant LCJR scores with repeated simulation exposure; Statistically significant LCJR scores between bachelor of science students and associate degree students
Johnson et al., 2012	$p = 0.00$	Increase in LCJR scores following role modeling intervention
Kantar & Alexander, 2012	n/a	LCJR effective in identifying strengths and weaknesses of clinical judgment in nursing students
Lasater et al., 2014	n/a	Simulation and role modeling videos impact clinical judgment development
Lasater & Nielsen, 2009	$0.01 < p < 0.05$	Increase in scores following concept-based learning activities
Mann, 2010	$p < 0.10$	No relationship between critical thinking and LCJR scores
Mariani et al., 2013	$p = 0.64$-0.92	No increase in scores over time with simulated scenarios

Table 2

Statistical Findings of Studies Using the LCJR

Source	P-Value	Findings
McMahon, 2013	$p < 0.10$	Improved LCJR scores following grand-rounds
Meyer, 2012	$p > .20$	LCJR scores remained the same across didactic and simulation instruction
Schlairet & Fenster, 2012	$p < 0.00$	Improved LCJR scores when the experimental simulation design was used
Shin et al., 2014	*n/a*	LCJR useful in developing a scenario-specific assessment tool for measuring clinical judgment
Victor-Chmil et al., 2015	$p < 0.00$	Improved LCJR scores following experiential learning simulation designs
Yuan et al., 2014	$p < 0.00$	Increase in LCJR scores following simulation scenarios

The settings in which researchers collected data using the LCJR varied. The researchers in 13 of 18 (72.2%) studies utilized the LCJR in a simulated learning environment. The researchers in 17 out of 18 (94.4%) studies used the LCJR to measure participants' clinical judgment while one (5.5%) research study used the LCJR to create a new clinical judgment instrument (Shin et al., 2014). The researchers in three of 18 (16.6%) studies scored participants' clinical judgment using the LCJR in more than one setting. Specifically, Blum et al. (2009) gathered LCJR data on participants in simulation and laboratory settings, Kantar and Alexander (2012) gathered LCJR data on participants in simulation and didactic settings, and Schlairet and Fenster (2012) gathered data on participants in simulation and clinical settings. The researchers in two of the 18

(11.1%) research studies employed the LCJR in non-simulation environments including didactic concept-based instruction and grand rounds (Lasater & Neilsen, 2009; Mann, 2010). Finally, the remaining 13 (72.2%) used only simulation as the setting in which students' clinical judgment was scored on the LCJR.

Despite the fact that researchers in 13 of the studies that used the same educational environment, the amount and types of simulation varied. For instance, simulation exposure ranged from 36 total hours to two semesters in length and from 20-minute increments to six-eight hour increments. Simulation acuity and student roles (primary nurse to family member) were also variable by study. Treatment implementation, delivery schedules, interventionist qualities, and treatment fidelity were often limited in description across the studies.

Six studies included effect size and power analyses and are provided in Table 3 (Coram, 2016; Johnson et al., 2012; Lasater & Nielsen, 2009; Mariani et al., 2013; McMahon, 2013; Victor-Chmil et al., 2015). Overall effect sizes ranged from low to moderate. Power analyses ranged from inadequate to adequate among those that reported them. Nearly all of the researchers in the studies in this review reported using more than one rater when using the LCJR to measure clinical judgment. In addition, these researchers reported a great amount of control over the environment in which data was collected, and often designed the interventions specifically for the purpose of assessing students' clinical judgment (Ashcraft et al., 2013; Blum et al., 2010; Bussard, 2015; Dillard et al., 2009).

Table 3

Effect Sizes and Power Analyses of Studies Using the LCJR

Source	Effect Size	Power Analyses
Coram, 2016	1.22-1.83	0.97-0.99
Johnson et al., 2012	≥ 1.13	"Adequate"
Lasater & Neilsen, 2009	0.17 – 0.30	Not described
Mariani et al., 2013	0.14	"Low observed power"
McMahon, 2013	Not described	"Inadequate power"
Victor-Chmil et al., 2015	0.63	0.95

Whether the studies where qualitative, quantitative or mixed, the researchers used the LCJR to measure clinical judgment in various scenarios. Most applied the LCJR to clinical judgment in simulation with nursing students while others used it on more advanced level students. Some researchers modified the LCJR itself in order to better fit with Tanner's definition of clinical judgment or to have it be more applicable to their particular study. While other researchers used the LCJR to measure characteristics other than clinical judgment, such as confidence. Therefore, the vast majority of researchers that used the LCJR did so in way that Lasater had not originally intended.

Fenske et al. (2013) conducted quantitative a study to evaluate clinical judgment by using the LCJR with both students and experienced nurses. Those authors found that clinical judgment as measured by the LCJR improved with time and was greater among nurses with over one year of practice experience ($p = 0.000$). Fenske et al. utilized one faculty rater for scoring clinical judgment, which could be viewed as a limitation. This limitation can is apparent in other studies as well and may be due to the financial constraints and time

requirements in conducting such a study. The other limitation would be in the way the author used the LCJR. Fenske et al. used the LCJR to measure clinical judgment rather than an evaluation tool between faculty and students. Fenske et al. did not measure the last two dimensions due to the limitation of the students being in a group setting. Last, the authors did not specifically address action even though both Tanner's (2006) model and medicine and allied health's conceptualizations of clinical judgment include action.

Another quantitative study by Johnson et al. (2012) investigated the effect of expert role modeling on LCJR scores. In this study, students (n = 275) in the intervention group received an expert role modeling video prior to a simulation involving an elderly surgical patient with delirium with the control group receiving no intervention prior to simulation. This study took place in five schools. In four out of the five schools two faculty raters were used while the fifth school just used one. However, Johnson et al. never reported the inter-rater reliability. The authors used the LCJR to score students' clinical judgment and yielded statistically significant differences between control and intervention groups within the *Noticing*, *Interpreting* and *Responding* dimensions of the LCJR (p = 0.00, Cohen's $d \geq 1.11$) (Johnson et al., 2012). As a result, the expert role modeling video that students in the intervention group viewed before simulation was positively correlated with higher clinical judgment scores. In other words, LCJR scores supported the use of the role modeling video as an effective means for improving students' clinical judgment. Students also indicated improvements in clinical judgment. Specifically, participants reported increased confidence,

awareness, and knowledge and that the video intervention contributed improvements in their clinical judgment (Lasater et al., 2012). Johnson et al., like Fenske et al. (2013), used the LCJR to measure clinical judgment but did not specifically appraise action completion.

Coram (2016) conducted a similar study to Johnson et al. (2012). Coram studied expert role modeling videos in nursing students who underwent simulation on clinical judgment. In this study, Coram used the LCJR similar to the study by Fenske et al. (2013). Coram reported significant differences between control and experimental groups using the LCJR following an expert role-modeling video (p = 0.00, Cohen's d 1.22-1.83). Coram concluded that viewing an expert role modeling video prior to a simulation experience could improve students' clinical judgment, as measured by the LCJR. Coram's study once again demonstrates how other researchers have utilized the LCJR, and that it is not being applied to its intended use. If Tanner's definition of clinical judgment is to be used, action should be accounted for. Action is not in the *Responding* dimension of the LCJR. However, action is part of defining clinical judgment not only in Tanner's model but also in allied health and medicine literature so this inconsistency found in the literature is concerning.

Yuan et al. (2014) applied the LCJR in a similar way to the methods employed by Coram (2016), Fenske et al. (2013), and Johnson et al. (2012). Yuan et al.'s (2014) quantitative study featured a repeated-measures design. The authors used the LCJR to measure clinical judgment in nursing students at the beginning and end of the semester. Similar to other studies in this review,

Yuan et al. collected data during simulated patient scenarios and the sample consisted of junior and senior level students (Ashcraft et al., 2013; Blum et al., 2010; Bussard, 2015; Coram, 2016; Dillard et al., 2009; Fenske et al., 2013; Johnson et al., 2012; Lasater et al., 2014; Mariani et al., 2013; McMahon, 2013; Schlairet & Fenster, 2012; Shin et al., 2014; Victor-Chmil et al., 2015). These researchers suggested that findings demonstrated an increase in clinical judgment over time from the beginning to the end of the semester although junior level students scored higher on the LCJR then the senior level students ($p = 0.000$). Yuan et al. did not offer an explanation for this but instead focused on students' measurement of their own LCJR scores versus what the faculty had measured. Yuan et al.'s study also suggests that the LCJR does not sufficiently evaluate clinical judgment because it does not measure all aspects of Tanner's model. This may have led to inconsistent results. Yuan et al. utilized two raters and the study had a high inter-rater reliability (0.83-0.91), which added strength to the study. However, as in Fenske et al. (2013), Coram (2016) and Johnson et al. (2012) the LCJR was not used for its intended purpose. In order to address this problem, other researchers have modified the LCJR or developed additional instruments for measuring action to use in conjunction with the LCJR.

For example, in a 2013 study, Ashcraft et al. (2013) modified the LCJR to include the appraisal of a nursing action. In this quantitative study, the authors utilized the LCJR in evaluating the clinical judgment of baccalaureate nursing students during simulation. These authors concluded that simulation experiences can lead to an increase in students' clinical judgment based on

increased modified LCJR scores from the beginning to the end of the semester using formative and summative student evaluations (p=0.00) (Ashcraft et al., 2013). Ashcraft et al. used the LCJR to look at action and outcomes as they related to clinical judgment. This is a similar to the definition of clinical judgment used by medicine and allied health. The modifications particularly involved the evaluation of a critical action described as patient safety "bombs" (p. 3). Although these actions were added as additional means of evaluating clinical judgment, not every action was clearly identified or discussed. Foregoing discussions surrounding the specific actions made this study less transparent as to how each action affected clinical judgment scores on the LCJR. This is a limitation of Ashcraft et al.'s study but also a strength in that the authors displayed an understanding of a potential limitation of the LCJR. Another limitation is that Ashcraft et al. used two raters but did not analyze inter-rater reliability, potentially contributing to a lack of study rigor.

In another quantitative study, Blum et al. (2010) used the LCJR to score students competence and confidence. Blum et al.'s approach was quite different to the way prior researchers had used the LCJR (Ashcraft et al., 2013; Coram, 2016; Fenske et al., 2013; Johnson et al., 2012; Yuan et al., 2014). The authors scored nursing students based on their performance in "simulation-enhanced laboratories" (Blum et al., 2010, p. 4). Students in Blum et al.'s study attended one of three laboratory sessions and were observed for competency either with a task trainer or with a simulation mannequin. Three faculty raters were used but inter-rater reliability analysis was not conducted. Blum et al. found that students'

clinical judgment improved over the course of a semester because LCJR scores increased, which demonstrated that the students were more competent and confident ($p = 0.000$). Blum et al.'s (2010) study differs from Ashcraft et al. (2013), Coram (2016), Fenske et al. (2013), Johnson et al. (2012), and Yuan et al. (2014) in the use of Tanner's definition of clinical judgment in conjunction with the LCJR to measure competence and confidence. Blum et al. equated competence and confidence to clinical judgment even though Tanner's model as well as allied health and medicine have not defined clinical judgment in this manner. Clinical judgment is a fluid process (Tanner, 2006). Cues are gathered, differentials determined, and actions are completed and then reevaluated (Gordon et al., 1994; Regan-Kubinski, 1991; Tanner, 2006). Defining clinical judgment in this manner while stating that Tanner's (2006) definition was being used is misleading. If clinical judgment were to be measured using Tanner's model then a modified LCJR such as that utilized by Ashcraft et al. (2013) would better reflect Tanner's definition.

Qualitative researchers have also used the LCJR in a similar way. Bussard (2015) evaluated students' clinical judgment in four progressive high-fidelity simulations. The author used Tanner's definition of clinical judgment and the LCJR as a measurement instrument. The LCJR was calculated based on journals by the students. Only one investigator analyzed the journals. Bussard (2015) reported that using the LCJR as an evaluation method for journaling assignments helped to ensure that course and curriculum objectives were attained. Based on the findings, Bussard suggested that nurse faculty could use

the LCJR to identify students with poor clinical judgment, which could then help to develop methods for targeting areas of weakness.

In another qualitative study, Kantar and Alexander (2012) utilized the LCJR to identify strengths and weaknesses in newly graduated nurses' clinical judgment by integrating the dimensions *Noticing, Interpreting, Responding,* and *Reflecting* into curriculum documents at three nursing schools. Following the students' graduation from a school of nursing, 20 nurse preceptors were asked to evaluate new graduates' clinical judgment. Using the LCJR as an interview guide with the preceptors, Kantar and Alexander (2012) were able to identify strengths and weaknesses related to new graduates' demonstrated nursing skills. Using the LCJR as a means for evaluating demonstrated nursing actions is similar to the way in which other qualitative researchers, such as Bussard (2015), have used the LCJR. Although Kantar and Alexander recommended using the LCJR to appraise graduates' demonstrated skills in practice, the preceptors' interviewed in this study identified that new graduates often needed further improvement in developing nursing interventions and tracking patient progress to treatments. Kantar and Alexander suggested that further integrating the dimensions of the LCJR, specifically *Responding,* into nursing program curricula may help contribute to the delivery of quality nursing care in new graduate nurses. Similar to quantitative research, qualitative researchers have also demonstrated the use of the LCJR for means beyond its original recommended use as a dialogue facilitator between faculty and students.

Quantitative and qualitative researchers have not been the only researchers to use the LCJR in a similar manner when measuring clinical judgment. In a mixed-method, pre-posttest design study, Schlairet and Fenster (2002) examined the effect that various simulation designs had on clinical judgment. The authors used the LCJR to measure clinical judgment. Schlairet and Fenster's study involved an experimental group who received simulation every other week and in-between attended didactics. Schlairet and Fenster termed this the "interleave" group (p. 669). The other group had three consecutive weeks of simulation and that was followed with three consecutive weeks of didactics. There were four faculty raters but there was no inter-rater reliability done. The authors admitted this was a limitation of the study and cited cost and resources as the reason for it not being conducted. The results of Schlairet and Fenster's study were that the interleave group scored higher on the LCJR than the group who had three consecutive weeks of simulation ($p < 0.001$). This was one of the few mixed studies that actually demonstrated statistically significant results. Schlairet and Fenster used the LCJR in the way many other quantitative and qualitative researchers have: as a measure of clinical judgment rather than a means for facilitating clinical judgment dialogue between faculty and students.

Although the majority of quantitative studies reviewed, as well as the one mixed study discussed already, reported statistically significant findings, Mariani et al. (2013), McMahon (2013), Meyer (2012) and Mann (2010) did not. The authors of these mixed-methods studies also used the LCJR to measure clinical

judgment. Mariani et al. (2013) looked at the effect of simulation debriefings on nursing students and the effect it had on clinical judgment scores. Once again, the authors measured clinical judgment using the LCJR and clinical judgment appeared to trend upward over time. Despite this, the difference in means was not statistically significant and inadequate power with the lack of sensitivity of the LCJR for detecting change related to debriefing may have affected these results (Mariani et al., 2013). While these findings would suggest that structured debriefing did not influence clinical judgment, qualitative data from the students suggest otherwise. In particular, students reported that structured debriefing sessions contributed to their clinical judgment through knowledge and technical skill development (Mariani et al., 2013). Mariani et al. used six faculty raters and the study had rigor with good inter-rater reliability ($r = 0.92$; $p < .01$). The authors listed several limitations of the study with the most significant being a lack of power.

In a mixed-method study, McMahon (2013) evaluated a control and experimental group. Individuals in the experimental group used a problem-based learning intervention while individuals in the control group completed independent preparation before a simulation scenario. In the scenario, the intervention was applied directly before simulation. McMahon used the LCJR to score clinical judgment. In this study, the author did not find a statistically significant increase in the LCJR scores with an intervention. However, similar to Mariani et al. (2013), students' reports in the qualitative findings indicated that clinical judgment did increase (McMahon, 2013). McMahon concluded that this

could potentially demonstrate that problem-based learning could be used to facilitate clinical judgment development. Five out of 18 scores met an inter-rater reliability greater than 0.70, while the rest of the reliability scores ranged from 0-0.55. The limitations of McMahon's study were that it was a single site, small pilot study, and had inconsistent inter-rater reliability (McMahon, 2013).

In another mixed-methods study, Meyer (2012) examined the clinical judgment of prelicensure students who received either didactic instruction or simulation. The author used the LCJR to measure clinical judgment. In this case, the findings did not demonstrate statistical significance between the two groups. Low effect sizes and inadequate power analysis may have contributed to these findings, although this is difficult to ascertain because this data was not specifically reported.

Finally, in a mixed-methods study, Mann (2010) examined grand rounds regarding its influence on clinical judgment. The author used the LCJR to measure students' clinical judgment before and after grand rounds as a teaching strategy versus those who did not attend grand rounds. Although LCJR scores were higher among students who had received the intervention of grand rounds, statistical significance was not reached. The study had two raters with an inter-rater reliability 98.49%. Limitations of the study included that it was at a single nursing school (Mann, 2010).

The findings of this literature review indicate that nursing researchers have commonly utilized the LCJR (Lasater, 2007) as a means of measuring and appraising nursing students' clinical judgment rather than as a communication

tool between faculty and students, which is what Lasater had intended (Ashcraft et al., 2013; Bambini et al., 2009; Blum et al., 2010; Bussard, 2015; Coram, 2016; Dillard et al., 2009; Fenske et al., 2013; Johnson et al., 2012; Kantar & Alexander, 2013; Lasater el. al, 2014; Lasater & Nielsen, 2009; Mann, 2010; Mariani et al., 2013; McMahon, 2013; Meyer, 2012; Schlairet & Fenster, 2012; Victor-Chmil et al., 2015; Yuan et al., 2014). Many of the studies also lacked a way for measuring action, which is discussed in the *Responding* aspect of Tanner's Clinical Judgment Model but not in the *Responding* dimension of Lasater's Clinical Judgment Rubric. Furthermore, most of the studies demonstrated that clinical judgment scores improved no matter the type of study, intervention, environment or time of exposure in a simulation setting (Johnson et al., 2012; Lasater & Neilsen, 2009; Mann, 2010; McMahon, 2013; Schlairet & Fenster, 2012; Victor-Chmil, 2015).

Implications

The findings from this literature review are important because they aid in understanding current practices associated with the use of LCJR and inform nursing education and future research. Three similarities in the literature were revealed: 1) the fact that the LCJR was used in simulation settings; 2) the presence of a number of research studies lacking in effect size, power analyses and inter-rater reliability; and 3) consistent reports of improvements in clinical judgment following interventions without examining the completion of nursing actions or interventions.

The use of the LCJR in simulation settings is consistent with Lasater's (2007) recommendations for future use. In many of the discussed studies the researchers used some form of simulation in which clinical judgment was then scored upon. In some studies raters observed students while they were in a high fidelity simulation setting and graded them using the LJCR (Blum et al. 2010, Ashcraft 2013, Yuan et al. 2014, Coram 2016, Johnson et al. 2012, Fenske et al. 2013). One researcher based the LCJR score student's journals after they had gone through a simulation (Bussard 2015). Based on the literature review, it appears that the vast majority of nursing researchers using the LCJR have done so in a simulation setting. Researchers conducting studies using the rubric in other environments should be interpreted cautiously, because use of the LCJR beyond simulation has yet to be fully examined.

Another similarity amongst the studies was the lack of effect size, power analyses, and inter-rater reliability. Many of the studies reviewed were statistically significant and while this is important it is equally important to have an effective size as well (Fenske et al. 2013; Johnson et al. 2012; Coram, 2016; Yuan et al. 2014; Blum et al. 2010). Effect size helps show that the observed difference is important and meaningful, as well as allowing for the effectiveness of similar studies to be compared on one scale. The lack of power in many of the studies is likely a result of resource constraints (Mariani et al., 2013; McMahon 2013). Most class sizes studied did not have sufficient size in order to create a sufficient power for a study. For example, in McMahon study there were only 23 student participants.

Many researchers also had difficulty with obtaining enough raters or reaching a sufficient inter-rater reliability (Ashcraft et al., 2013; Blum et al. 2010; Schlairet and Fenster 2002; McMahon 2013). Some of these studies, such as Blum et al. (2010), did not include inter-rater reliability measurements. This trend is likely due to a lack of time and financial constraints as the studies in this review were heavily time intensive and adequately paying raters can prove difficult.

Since the majority of researchers examining clinical judgment did not report a sufficient power analysis, effective size and inter-rater reliability it is difficult to determine the strength of the statistically significant findings indicating that LCJR scores improved across interventions. Although the results from this literature review support the use of the LCJR for measuring clinical judgment, these findings should therefore be interpreted carefully given the limitations discussed.

The last similarity amongst the studies was consistent reports of improvements in clinical judgment following interventions without examining the completion of nursing actions or interventions. In Tanner's Clinical Judgment Model, the *Responding* aspect specifically emphasizes action. The LCJR, which is based on Tanner's model, does not contain a measure for action in *Responding*. Ashcraft (2013) recognized the lack of action within the LCJR and modified the LCJR so that it could more effectively measure Tanner's definition of clinical judgment. However, none of the other authors discussed in this literature review modified the LCJR to take consider action. Another option would have been to create a separate tool that could be used in conjunction with the LCJR in

order to take action into account when measuring clinical judgment. This was not noted this in any of the other studies reviewed. In studies where results contributed to faculty interpretations of students' actions, the LCJR may have been used in a manner that is different from how it was originally intended. In order to effectively use the LJCR, during simulation, faculty should focus mainly on using the rubric as a guide for discussing clinical judgment with students.

Related research. In addition to the literature on the LCJR and clinical judgment, other related works informed this research. For example, in 2012 and 2015, Dreifuerst explored the use of simulation debriefing and higher order thinking. Although clinical judgment was not the concept of interest, the description of the relationship between thinking and action is relevant to this research study. According to Dreifuerst (2015), in any given clinical situation, an individual's thinking and action manifest in four different ways. In the best circumstance, a student exhibits the "right thinking with the right action" (Dreifuerst, 2015, p. 269). In other circumstances however, the student may exhibit the "right thinking and wrong action, wrong thinking and right action, or the wrong thinking and the wrong action" (Dreifuerst, 2015, p. 269). Uncovering connections between thinking and action is important because it provides an opportunity to identify ill-conceived assumptions or gaps in knowledge that could affect patient care (Dreifuerst, 2015). The thinking and action relationships identified by Dreifuerst translate closely to the *Interpreting* and *Responding* aspects of Tanner's (2006) Clinical Judgment Model.

For example, in 2014, Yuan et al. assessed baccalaureate nursing students' clinical judgment using the LCJR during high fidelity simulations of appendicitis, chronic obstructive pulmonary disease, gastrointestinal bleeding, myocardial infarction, and critical trauma. Assessment of student interventions related to general assessments, health history inquiry, and patient concerns (pain, emesis, hunger). Yuan et al. (2014) explained that students were expected to implement "appropriate interventions" but did not specify whether the interventions were indicated for the specific scenario or if the interventions were actually completed (p. 7). Rather, Yuan et al. (2014) reported that students "were expected to intervene appropriately and in their scope of practice" (p. 10). Based on this, the appropriateness of interventions was largely subjective in nature rather than objective since the author did not define what an appropriate intervention was. Although the scores on the LCJR indicated that student responses ranged from *developing* to *accomplished*, and actions were appropriate based on the raters' interpretations, it is difficult to ascertain whether an indicated nursing action for the scenario was actually completed (Yuan et al., 2014). This was found to be the case in many of the other studies reviewed.

Conclusion

This chapter explored the clinical judgment literature across health professions, discussed models of clinical judgment in nursing, examined clinical judgment instrumentation (the LCJR) as well as its application in research, and provided implications related to the current use of the LCJR. Health professionals consider clinical judgment as fundamental to medical practice in

that it impacts the provision of safe patient care. In one model widely applied to nursing practice, Tanner (2006) described clinical judgment as consisting of *Noticing*, *Interpreting*, *Responding* and *Reflecting*. From these aspects identified in Tanner's (2006) model, Lasater (2007) created an associated instrument, the LCJR. In the *Responding* aspect of the Clinical Judgment Model, Tanner (2006) included the component of action. It is unclear however, if this action component is embedded into the *Responding* dimension on the LCJR, especially given the lack of studies examining this relationship.

The current study will advance the science of nursing education by evaluating clinical judgment using the LCJR while also evaluating indicated action completion using a Nursing Action Form (NAF) (Lasater, 2007). Findings from this study could also aid in reforming nursing education curricula. Studying students' clinical judgment with indicated nursing action completion would address the current gaps in nursing education research related to the use of the LCJR and, provide a means for understanding the relationship between clinical judgment and the completion of an indicated action during high fidelity simulation. The methods of this research study are presented and described in Chapter III.

Chapter III Methods

Introduction

The purpose of this descriptive, cross-sectional study was to describe the relationship between seventh and eighth semester traditional prelicensure baccalaureate nursing students' clinical judgment, as measured by the Lasater Clinical Judgment Rubric (LCJR), and the completion of an indicated nursing action (Lasater, 2007). This study also examined the relationship between *Responding* dimension of the LCJR and the completion of an indicated nursing action. The methods of the study is presented here. This chapter is organized into four sections: (1) selection of participants, (2) instrumentation, (3) data collection, and (4) research questions and hypotheses.

Selection of Participants

The study took place at a public, medium sized university in the Midwest that has a traditional prelicensure baccalaureate nursing program. Following approval for exempt research by the Institutional Review Board (Appendix A) and the participating school of nursing (Appendix B), the researcher invited students who met the inclusion criteria on the subject information sheet (Appendix C) to participate in this study approximately one week prior to data collection. During this time, the researcher provided students with verbal information that described the study details and what was expected. Inclusion criteria included those students who were enrolled in an adult medical/surgical nursing course that incorporated simulation into its curriculum during the spring semester of 2016 at

one of two campuses: the main campus or the satellite site. Eligible participants were in enrolled in either their seventh or eighth semester of a traditional prelicensure baccalaureate nursing program and had previous experience in high fidelity simulation during prior coursework. The researcher informed faculty at the school of the study using the Study Information Sheet for Faculty (Appendix D) and the faculty agreed to have their students participate in the research. As a part of the established course requirements all students were required to participate in multiple simulation experiences. However, students were able to decline study participation by answering "no" to questions on a demographic survey prior to the start of the study.

Of a possible 96 eligible participants, 92 participated. The participants represented the usual demographics for the university's nursing student population: largely female, Caucasian, and between the ages of 18 and 34 (Table 4).

Table 4

Participant Characteristics

	N	%
Gender (*n* = 92)		
Male	6	6.50%
Female	86	93.50%
Age (*n* = 92)		
18-24	90	97.80%
25-34	2	2.20%
Race (*n* = 92)		
Asian/Native American/White	1	1.10%
Black and White	1	1.10%
Black or African American	2	2.20%
Black, Asian	1	1.10%
Hispanic	3	3.30%
Hispanic and White/Caucasian	1	1.10%
White/Caucasian	83	90.10%
BSN as First Degree (*n* = 92)		
Yes	91	98.90%
No	1	1.10%
Previous Health Care Experience (*n* = 92)*		
Nurse Assistant	86	82.60%
Nurse Extern/Intern	5	4.80%
Lab Assistant	1	1.00%
Medical Secretary	1	1.00%
Scribe	1	1.00%
Other	6	5.70%
None	1	1.00%
Missing Response/Not Reported	3	2.90%

* Multiple experiences reported

Sampling Procedures

For the purpose of this study, the researcher used purposive sampling to identify college students who were enrolled in a traditional prelicensure baccalaureate nursing program where coursework involved high fidelity simulations. A priori, the sample size was determined using G*Power (Faul,

Erdfelder, Lang, & Buchner, 2007). Based on a power analysis with $p < 0.05$, a power of 0.80, a moderate effect size ≥ 0.30, and following a two-tailed significance test, the researcher determined that a sample of at least 80 participants was needed for this study. Ninety-two participants were enrolled in the study, which helped to further strengthen the power and detect the presence of a correlation.

Although this study had a 100% participation rate, two participants had missing data and were excluded from the analysis. A third participant's data was also excluded because he/she was unable to be scored on all of the instruments in that the course instructor inadvertently completed the action. Additionally, a fourth student was unable to complete an indicated action because of another participant's error in the care of the patient that took place earlier in the simulation. After eliminating the data from these four individuals, the final sample size was comprised of 92 participants.

Instrumentation

A single rater assessed students' clinical judgment using the four-dimensional LCJR. This instrument is comprised of eleven items that fall under four main aspects of clinical judgment: (a) *Noticing*, (b) *Interpreting*, (c) *Responding*, and (d) *Reflecting* (Lasater, 2007). In the LCJR, three items are included in the first aspect, *Noticing*, two items are included in the second aspect, *Interpreting*, four items are included in the third aspect, *Responding*, and two items are included in the fourth aspect, *Reflecting*. Lasater (2007) referred to

each item within the four aspects as “dimensions” and scored each dimension using Likert-scale scoring with a score of 4 indicating *exemplary* item ability, a score of 3 indicating *accomplished* item ability, a score of 2 indicating *developing* item ability, and a score of 1 indicating *beginning* item ability (p. 501). Total scores range from 11-44 with a higher range of scores indicating *accomplished* to *exemplary* clinical judgment and lower range scores indicating *beginning* to *developing* clinical judgment.

Noticing

Under the *Noticing* dimension, items include: “focused observation, recognizing deviations from expected patterns, and information seeking” (Lasater, 2007, p. 500). Lasater (2007) defined *exemplary* focused observation as the regular focused observation and monitoring of objective and subjective patient findings. The author further described *accomplished* focused observation as the regular observation and monitoring of subjective and objective data. While most pertinent data are noticed, an individual exhibiting *accomplished* focused observation may miss subtle patient cues, whereas someone with *exemplary* observation would not. Lasater described *developing* focused observation in relation to students who attempt to monitor subjective and objective data but become overwhelmed and may miss pertinent information due to a focus on the most obvious data, while *beginning* observation refers to students who are confused and unorganized. In addition, students with *beginning* observation may make errors as a result of missed data (Lasater, 2007, p. 500).

The second dimension of *Noticing* is the recognition of "deviations from expected patterns" (Lasater, 2007, p. 500). Lasater described *exemplary* recognition of deviations as identifying subtle patterns that differ from expected patterns, which in turn, guide nursing assessments (Lasater, 2007, p. 500). While most subtle variations are recognized, someone with *accomplished* recognition would miss some variations whereas someone with *exemplary* recognition would not. *Accomplished* recognition of deviations occurs when students recognize only obvious patterns and guide their assessments based on these findings. *Developing* recognition of deviations occurs when students still identify obvious patterns but miss important information and are unsure about moving forward with nursing assessments. Lasater defined *beginning* recognition of deviations as occurring when students only focus on one cue at a time, miss a large number of pertinent patient deviations, and do not refine their assessments (Lasater, 2007, p. 500).

The third dimension of *Noticing* is information seeking. *Exemplary* information seeking is assertively seeking out information, planning interventions, collecting pertinent subjective data, and participating in patient and family interactions (Lasater, 2007). *Accomplished* information seeking is actively seeking out subjective data and planning interventions but occasionally neglecting pertinent leads. While most information must be actively sought out, someone with *accomplished* information seeking would miss collecting some pertinent data whereas someone with *exemplary* information seeking would not. *Developing* information seeking is the limited collection of data and confusion

regarding the pertinent positives and negatives of a situation. *Beginning* information seeking is ineffective data collection that particularly relies on objective data alone. Individuals with *beginning* information seeking also fail to communicate with patients and family, and as a result, miss out on pertinent positives and negatives (Lasater, 2007, p. 500).

Interpreting

Within *Interpreting* in the LCJR, the dimension items include "prioritizing data" and "making sense of data" (Lasater, 2007, p. 500). *Exemplary* prioritizing data is focusing on relevant and pertinent data to help explain the condition of the patient. *Accomplished* prioritizing data is a general focus on important data and the seeking out of additional information. While an individual with *accomplished* prioritizing data would focus on less pertinent data, someone with *exemplary* prioritization would not. Students with *accomplished* data prioritization may attend to less relevant data before attending to more pertinent data. Individuals rated as *developing* data prioritization is attempting to focus on important data but placing a greater emphasis on less relevant or less useful data. *Beginning* prioritizing data is difficulty with focusing on and assigning relevance to data with which diagnoses are generated. Students with *developing* prioritizing data attempt to address all patient data rather than the most relevant (Lasater, 2007, p. 500).

The second dimension of *Interpreting* is "making sense of data" (Lasater, 2007, p. 500). *Exemplary* making sense of data is noting and making sense of complex data patterns, comparing data patterns with what is known from nursing

knowledge, experience or research, and developing justifiable intervention plans. A student exhibiting *exemplary* making sense of data also compares pertinent patient patterns with known patterns and then develops justifiable intervention plans. Students who exhibit *accomplished* making sense of data are those who interpret data with known patterns and then develop interventions with supporting rationale. These students may have difficulty forming an intervention plan in complicated or rare situations (Lasater, 2007, p. 500). Students who exhibit *developing* making sense of data are those who are able to compare presenting data with known patterns but in only simple or common situations. Students who are still *developing* in making sense of data have difficulty with moderately challenging data and often require advice or assistance from others. Students who exhibit *beginning* making sense of data have trouble in easy and routine situations in understanding patient cues and comparing them with known patterns (Lasater, 2007, p. 500). Students who are in the *beginning* stages of making sense of data often require extra help forming diagnoses and creating interventions (Lasater, 2007, p. 500).

Responding

Under *Responding* the items include “calm and confident manner, clear communication, well-planned intervention/flexibility, and being skillful” (Lasater, 2007, p. 500-501). An *exemplary* calm and confident manner is the acceptance of responsibility, delegation of assignments, conduction of patient assessments and providing reassurance to patients and their families. An *accomplished* calm and confident manner is the general display of leadership and responsibility.

Students with an *accomplished* calm and confident manner may become stressed in complex situations. A *developing* calm and confident manner is tentativeness in leadership roles. Students with a *developing* calm and confident manner only provide reassurance to patients and families in routine or simple situations and often become disorganized and stressed. A *beginning* calm and confident manner is a lack of leadership except for the routine and simple situation. A student with a *beginning* calm and confident manner is usually disorganized and their lack of control can make patients and families nervous or less cooperative (Lasater, 2007, p. 500).

The second dimension of *Responding* is clear communication. *Exemplary* clear communication is the effective discussion of nursing interventions with patients and families (Lasater, 2007, p. 501). Students exhibiting *exemplary* clear communication will involve other healthcare team members, provide direction, and check for patients' understanding. *Accomplished* clear communication is the ability to carefully describe nursing interventions with patients and families. Students exhibiting *accomplished* clear communication are generally able to discuss the care plan effectively, but need to further develop their nurse-patient rapport. *Developing* clear communication is the ability to communicate some directions to patients, families, and coworkers. Students with *developing* clear communication skills are only somewhat successful in communicating with patients and families and may lack competence in nursing care. *Beginning* clear communication is having difficulty with communicating and

providing confusing or contradictory explanations that confuse or cause anxiety in the patient or family (Lasater, 2007, p. 501).

The third dimension of *Responding* consists of well-planned intervention/flexibility. *Exemplary* well-planned intervention/flexibility is the tailoring of nursing care to individual patients, closely monitoring patient progression, and the adjustment of treatment based on patient responses (Lasater, 2007, p. 501). *Accomplished* well-planned intervention/flexibility is the development of nursing care based on relevant data without the expectation of adjusting treatment based on patient response. Lasater described *developing* well-planned intervention/flexibility as the development of nursing care from obvious data. Individuals with *developing* well-planned intervention/flexibility are often unable to adjust their care based on patient responses. *Beginning* well-planned intervention/flexibility is the development of a single unclear or confusing intervention. Although students with *beginning* well-planned intervention/flexibility may monitor some data, these individuals often have incomplete nursing interventions (Lasater, 2007, p. 501).

The last dimension of *Responding* consists of "being skillful" (Lasater, 2007, p. 501). *Exemplary* being skillful is a "mastery of necessary nursing skills" (Lasater, 2007, p. 501). *Accomplished* being skillful is being proficient with a majority of nursing skills. Students who are *accomplished* in the being skillful dimension may need improvement in the speed or accuracy of nursing skills. Students who are *developing* in the being skillful dimension are "hesitant or ineffective in using nursing skills" and students who are *beginning* in the being

skillful dimension are “unable to select and/or perform nursing skills” (Lasater, 2007, p. 501).

Reflecting

Under *Reflecting* the dimension items include “evaluation/self-analysis” and “commitment to improvement” (Lasater, 2007, p. 501). *Exemplary* evaluation/self-analysis is the independent evaluation of one’s own clinical performance. These students note important decision-points, describe alternative solutions, and evaluate their care choices. Students with *accomplished* evaluation/self-analysis evaluate their own clinical performance with minor prompting (Lasater, 2007, p. 501). Students exhibiting *accomplished* evaluation/self-analysis may need some guidance in major events and decisions. *Developing* evaluation/self-analysis is the verbalization of the most obvious events or decisions. Students exhibiting *developing* evaluation/self-analysis are often protective over their own choices and struggle to identify alternative solutions. *Beginning* evaluation/self-analyses is the brief reflection of one’s own care choices (Lasater, 2007, p. 501). Students exhibiting *beginning* evaluation/self-analyses try finding ways of justifying their own solutions without fully evaluating them.

The last dimension of *Reflecting* is commitment to improvement (Lasater, 2007, p. 501). *Exemplary* commitment to improvement is the demonstration of a desire to continue strengthening one’s own performance. These students continuously evaluate their decision points and alternative solutions (Lasater, 2007, p. 501). *Accomplished* commitment to improvement is the demonstration

of a desire to strengthen current performance and evaluation of their strengths and weaknesses. *Developing* commitment to improvement is the mindfulness of the need for further improvement. Students who exhibit a *beginning* level of commitment to improvement are uninterested in or have an inability to critically appraise one's own performance (2007, p. 501). Students with *beginning* commitment to improvement are often unable to identify flaws in their care or address areas in need of further improvement.

Validity of the LCJR

Lasater (2007) did not report validity estimates with the LCJR's initial publication but testing has been conducted in subsequent studies. Victor-Chmil and Larew (2013) examined the psychometric properties of the LCJR across 11 nursing research studies and discovered reports of the instrument validity only in prelicensure, undergraduate, nursing students during simulation environments. In addition, the authors found that examinations of the LCJR's construct and content validity were limited in the nursing literature (Victor-Chmil & Larew, 2013). As a result, Victor-Chmil and Larew concluded that additional tests of validity were needed especially in areas beyond simulation environments and undergraduate nursing students. In one study that did examine the construct validity of the LCJR, Gubrud-Howe and Sideras (2011) reported moderate levels with z-scores ranging from 0.66 – 0.96. Of the researchers who have examined the content validity of the LCJR, qualitative findings garnered from reflective self-assessments have led to the general support of the LCJR in measuring clinical judgment confidence (Carrick & Miehl, 2010; Cato et al., 2009).

In another instance, Kardong-Edgren, Adamson, and Fitzgerald (2010) identified the LCJR as the one tool "coming closest to addressing the three learning domains [of student performance] simultaneously" (p. e34). However, the authors recommended that nursing researchers seek additional tools, or further refine existing tools, in order to comprehensively evaluate the cognitive, psychomotor, and affective domains of student performance (Kardong-Edgren et al., 2010). In one study by Johnson et al. (2012) effect sizes when using the LCJR was examined and described using Cohen's $d \geq 1.13$ for the dimensions of *Noticing*, *Interpreting*, and *Responding* (Johnson et al., 2012). In other work, Mariani, Cantrell, Meakim, Prieto and Dreifuerst (2004), Lasater and Neilsen (2009), and Jensen (2013) reported low to moderate effect sizes. Although research suggests that the LCJR demonstrates acceptable validity, Gubrud-Howe and Sideras (2011) suggested that researchers consider using a variety of instruments when investigating clinical judgment in order to achieve the most comprehensive evaluation of each of the LCJR's dimensions.

Reliability of the LCJR

Lasater (2007) did not report internal consistency of the LCJR with its initial publication but researchers have conducted validity estimates in subsequent studies. Victor-Chmil and Larew (2013) reported the LCJR to have a range of inter- and intra-rater reliability scores of 0.40 to 0.98 per dimension. According to the authors, the broad range of reliabilities was likely due to varying degrees of rater training. Given this wide range, Victor-Chmil and Larew (2013) suggest conducting further reliability testing of the LCJR. Internal consistency

has also ranged from 0.62 – 0.95 (Blum et al., 2010; Fenske et al., 2013; Jensen, 2013; Victor-Chmil & Larew, 2013).

The LCJR has had past inter-rater reliabilities averaging 0.89, an intra-rater reliability of 0.91, and an internal consistency of 0.97 (Adamson, 2011). The Cronbach alpha, an estimate of reliability, for the rubric has ranged from 0.86 to 0.95 in prior studies (Victor-Chmil & Larew, 2013). Evaluation of inter-rater reliability in studies using the LCJR is important because LCJR reliability may be influenced by individual rater biases (Adamson et al., 2011).

Limitations of the LCJR

In addition to the few reports of the LCJR's validity and reliability, other limitations of the rubric exist (Adamson, 2011; Johnson et al., 2012). The subjective nature of the LCJR may cause variations in inter-rater reliability because the rubric is largely dependent upon subjective rater interpretation of each dimension (Ashcraft et al., 2013). This limitation will be found in most instruments that do not score based on objective data but rather subjective data. Researchers can only hope to add consistency amongst raters when using instruments such as the LCJR that are subjective in nature. In a review summarizing the findings of three studies that used the LCJR, Adamson et al. (2011) reported that when inter-rater reliabilities were stable, the data gathered from the rubric were also reliable. However, in instances where inter-rater reliabilities are unstable, data from the LCJR may not be reliable (Adamson et al., 2011). Several studies have shown that achieving sufficient inter-rater reliability on the LCJR is a difficult task, especially in the presence of multiple raters

(Adamson et al., 2011). To assure strong inter-rater reliabilities, extensive rater training on the LCJR is needed (Victor-Chmil, 2013). When extensive rater training is utilized, measures should still be taken to ensure consistency between raters at multiple sites.

Nursing Action Form

The Nursing Action Form (NAF) is a binary assessment tool developed for this study to assess whether or not an indicated nursing action was completed during the observed high fidelity simulations (Appendix E). The researcher developed this instrument based on findings from previous pilot testing (Fedko & Dreifuerst, 2016). Participants in the pilot study were homogenous to the sample used in this dissertation study. Specifically, participants consisted of 22 seventh semester traditional prelicensure baccalaureate nursing students. Fedko and Dreifuerst (2016) initially tested three versions of the NAF (Appendix F-H) to determine the best means for evaluating students' completion of indicated actions during high fidelity simulations in relation to clinical judgment (Fedko & Dreifuerst, 2016). The clinical judgment (LCJR scores) and nursing actions (NAF scores) of the student participants across all simulation roles (primary nurse, secondary nurse, lab/imaging technician, procedural team, family member) were used by the researchers during the pilot testing, leading to skewing of the data (Fedko & Dreifuerst, 2016). For instance, over half of the participants in this study were eliminated due to incomplete LCJR data of individuals in non-nursing roles. In the pilot study, Fedko and Dreifuerst (2016) examined for correlations

between participants' NAF scores and LCJR scores using the Pearson's correlation statistical test.

Overall, the results from the pilot study identified that a statistically significant ($p < 0.05$) moderate correlation ($r = 0.36$) existed between students' clinical judgment (LCJR scores) and the completion of indicated actions (Fedko & Dreifuerst, 2016). In addition, a statistically significant ($p = .02$) moderate correlation ($r = 0.43$) existed between students' *Responding* score on the LCJR and the completion of indicated actions (NAF scores). It is important to note, however, that participants in the study by Fedko and Dreifuerst (2016), on average, less than half (44%) of the indicated nursing actions, as measured by the earlier versions of the NAF. In fact, inclusion of more than one action on the previous version of the NAF became a limitation of the pilot study by Fedko and Dreifuerst (2016) because it was not clear if the correlation between LCJR scores and action completion, or *Responding* scores and action completion, represented that the action taking place was indicated for the specific situation, or if it represented the completion of a routine nursing action.

As a result, the researcher developed a modified version of the NAF for this study to correspond to each high fidelity simulation (Appendix I-V) and to observe for only one indicated action per primary nurse per scenario. Initially, the researcher designed fourteen indicated actions to observe during the study. The researcher chose indicated nursing actions, which a panel of five nursing faculty experts reviewed prior to data collection. Two of the faculty who reviewed the actions were employed at an outside facility and three were at the data

collection site. After the study commenced however, the researcher changed six of the fourteen indicated actions per course faculty request, which became a limitation of the study. Although these changes were made based upon faculty preference, the actions that were changed remained consistent with patient quality and safety issues. The nursing faculty at the data collection site requested this change as a way of better ensuring that the students would be better prepared to complete the actions that were being observed for in this study. After consultation with two outside faculty experts, the researcher agreed to honor the request of the nursing faculty at the data collection site with an additional review of the changed actions. A panel of four nursing faculty experts then reviewed the actions that were changed. Two of the faculty who reviewed the changed actions were employed at an outside facility and two were employed at the data collection site. Although it was possible that this change could have influenced the completion of the indicated nursing actions in this study it did not. The study participants in the group with the changed action had results that were consistent with the group that remained unchanged. This is further discussed in Chapter IV and V.

Data Collection

There were two data collection sites, the main campus and satellite campus of a Midwestern university. While each campus had a different professor for the course, the medical/surgical courses the researcher observed in this study were equivalent in terms of course objectives and design. Despite this,

the high fidelity simulations were not identical and those used for the study were chosen and designed largely by instructor preference at the site location. As a result, there were slight variations in the simulations across the two sites. The seven high fidelity simulations the researcher observed during this study were: acute coronary syndrome, chest-tube/trauma, chronic obstructive pulmonary disease/respiratory failure, gastrointestinal bleed, diabetic ketoacidosis, sepsis, and cerebrovascular accident. At Site One, students were required to participate in high fidelity simulation scenarios consisting of acute coronary syndrome, chest-tube/trauma, gastrointestinal bleed, and diabetic ketoacidosis. At Site Two, the students were required to participate in high fidelity simulation scenarios consisting of acute coronary syndrome, chronic obstructive pulmonary disease, cerebrovascular accident, and sepsis.

For this research study, the researcher observed and scored students while they participated in the simulations and debriefings already required for the course. Because of this, the researcher conveyed to students that their agreement to participate in the study meant having their LCJR and NAF scores included in the study database. A decision not to participate in this study meant that they would still be observed and scored during simulation and debriefing but that scoring sheets would be destroyed at the end of the simulation day and their scores would not be included in the study database. This procedure protected the identity of students who chose to participate and those who did not since the instructor, the researcher, and other students would not know who was (and was not) a study participant during the simulation and debriefing.

Per the custom in this nursing program, multiple students participated in each simulation and were assigned different roles such as primary nurse, secondary nurse, medication nurse, lab technician, procedure team, radiology technician, and/or family member. At Site One, the course instructor designated participant roles by intentional assignment to ensure equal exposure of students to a variety of roles throughout each high fidelity simulation during the semester. At Site Two, the students themselves randomly designated their own roles, although an effort was made by the students to ensure equal exposure of every individual to a variety of roles across each high fidelity simulation.

When the research study commenced, just prior to each simulation, the researcher reminded students about the information on the SIS and then asked students who were assigned to the primary nurse role to complete a demographic survey (Appendix W). Instructions were included on the demographic survey asking students to complete the survey in its entirety if they agreed to have their data be a part of this research study. If students did not agree to have their data be a part of this research study, the instructions on the demographic form instructed students to write “no” in response to each survey question and then their data would not be used in the study analysis.

The researcher coded every demographic survey that was provided to students in the primary nursing role prior to the start of each data collection day with an identification number assigning each potential participant with a unique number for identification. Prior to the start of data collection, the participants in primary nurse roles attached the study numbers to their uniform. This allowed

the researcher to use the study numbers in place of their names for the study data collection to protect student identity.

The researcher scored each participant on the LCJR and the NAF. Originally in the study design, the researcher envisioned two additional scorers. Recruitment for additional research assistants occurred at three separate health institutions, five universities and colleges in the area, and through contact with personal acquaintances. Due to the extensive weekly time commitment required for the observation and scoring, the researcher was unable to recruit additional research assistant positions despite the offering of monetary incentives. Therefore, the researcher remained the only scorer for this study. Nursing faculty were present within the educational environment during participant scoring to facilitate the high fidelity simulation and debriefing sessions as was customary for their course, but did not have access to students' LCJR or NAF scores.

All students participated in the usual post-simulation debriefing sessions with their course instructor as a part of the course requirements. The researcher observed participants' simulation and debriefing sessions and scored participants' clinical judgment and completion of an indicated nursing action during the observed simulation and debriefing discussions. Prior to the start of this study, the researcher assumed that debriefing would provide a large amount of data that would contribute to the LCJR scoring of each participant; however, as the study commenced, debriefing sessions led by the four faculty involved in this study varied. Across the faculty debriefers, debriefing sessions were not

homogenous in structure nor did they consistently follow an evidence-based model. Despite the absence of control in debriefing methods in this study, information from participants' discussions contributed somewhat to scoring on the LCJR. Particularly, participants' discussions contributed to the assignment of LCJR scores related to the aspects of *Noticing, Interpreting* and *Reflecting* based on the students' discussions and how they corresponded to the dimensions of focused observation, recognition of deviations, information seeking, prioritization, sense-making, self-analysis, and commitment to improvement. For example, the researcher scored participants on how they articulated identified patterns in patient cues and discussed how they recognized deviations. Although it was possible that additional debriefing occurred during the following weeks' didactic learning, this was not observed for in this study.

The researcher scheduled simulation experiences to occur over nine weeks of the semester at Site One, and over seven weeks of the semester at Site Two. Given that simulations began at different times during the semester for each site, data collection took place over a total of twelve weeks during the 2016 spring semester. At Site One, observing a total of two students per simulation with a total of three simulations per week yielded a total of 54 potential LCJR and NAF scores. At Site Two, observing a total of three students per simulation with a total of two simulations per week yielded a total of 42 potential LCJR and NAF scores. Thus, for this study a combined total of 96 individual LCJR and NAF scores were possible. After accounting for missing scores, student error, and instructor involvement, a total of 92 scores comprised the data for this study.

Only the LCJR and NAF data from students who agreed to study participation, as indicated by the completion of the demographic survey, was used for the study data. Following the observation of simulation and debriefing, the researcher entered data into a password protected, de-identified electronic database within five days of data collection and all paper copies of the LCJR and NAF were destroyed.

Simulation Scenarios

The simulations observed in this study consisted of two to three sections with a different primary nurse being scored in each section. A snapshot of the simulations and the indicated actions is provided in Table 5.

Table 5

Simulation Scenarios

Site	Simulation	Action
1	Acute Coronary Syndrome	Validate Heparin bolus with second nurse.
1	Acute Coronary Syndrome	Administer intravenous push Atropine.
1	Chest-Tube/Trauma	Apply non-petrolatum occlusive dressing to chest-tube site.
1	Chest-Tube/Trauma	Place hemostat, spare dressings, and sterile water at bedside.
1	Chronic Obstructive Pulmonary Disease	Decrease intravenous fluids.
1	Gastrointestinal Bleed	Retrieve new intravenous fluid bag.
1	Gastrointestinal Bleed	Clarify duplicate Pantoprazole 80mg intravenous push order with the medical doctor.
1	Diabetic Ketoacidosis	Validate intravenous Insulin dose with second nurse.
2	Acute Coronary Syndrome	Retrieve new fluid bag.
2	Acute Coronary Syndrome	Retrieve adult sized nasal cannula.
2	Chronic Obstructive Pulmonary Disease	Secure peripheral intravenous line.
2	Chronic Obstructive Pulmonary Disease	Place urinary catheter on non-movable part of bedframe.
2	Cerebrovascular Accident	Raise two bed side-rails.
2	Sepsis	Verify patient code status.

Acute coronary syndrome, Site One. During the acute coronary syndrome simulation at Site One, "validate heparin bolus with a second nurse" was the indicated action included on the NAF (Appendix I). For this simulation, the student encountered a physician's order for a Heparin bolus to be given prior to starting a continuous Heparin drip. Before administering a Heparin bolus, verification of the drawn up dosage with a second nurse was the indicated action. In the second section of the simulation, the patient began to develop symptomatic bradycardia. At this point, administration of intravenous push Atropine was the indicated action. The primary nurse in this section was then scored on the NAF (Appendix J) based on the completion of the indicated action "administer intravenous push Atropine." The two sections in this scenario are areas in which the researcher changed the indicated action based on faculty preference.

Chest tube/trauma, Site One. During the chest tube simulation at Site One, "apply non-petrolatum occlusive dressing to chest tube site" was the indicated action included on the NAF (Appendix K). During this high fidelity simulation, the patient had an allergy to Petrolatum and would require the use of a non-Petrolatum gauze to prevent an allergic reaction around the chest tube site. In the second section of the simulation, retrieval and placement of a hemostat clamp, spare dressings, and sterile water at the bedside was the indicated action in anticipation of the admission of a patient with a chest tube. The researcher then scored the nurse in this section on the NAF (Appendix L) based on the completion of the indicated action "place hemostat, spare

dressings, and sterile water at bedside." The two sections in this scenario are areas in which the researcher changed the indicated action based on faculty preference.

Chronic obstructive pulmonary disease, Site One. During the simulation involving a patient with chronic obstructive pulmonary disease at Site One, "decrease intravenous fluid" was the indicated action included on the NAF (Appendix M). In the first section, intravenous fluids were being run open to gravity. In the second section, intravenous fluids were running at 150 mL/hr. In this simulation, the patient had a history of a previous myocardial infarction and upon the start of the second section developed signs of heart failure. The researcher then scored the primary nurses during the two sections on the NAF (Appendix M) based on the completion of the indicated action to decrease the intravenous fluid infusion rate. The two sections in this scenario are areas in which the researcher changed the indicated action based on faculty preference.

Gastrointestinal bleed, Site One. During the simulation involving a patient with a gastrointestinal bleed at Site One, "retrieve new intravenous fluid" was the indicated action included on the NAF (Appendix N). In this simulation, the patient already had 5% dextrose in Lactated Ringers intravenous fluid running, but normal saline was ordered. Thus, retrieving the normal saline intravenous fluids was the indicated action. In the second section, a duplicate order for an intravenous push of Pantoprazole existed in the medical chart. At this point, clarification of the two Pantoprazole orders with the medical doctor was the indicated action. The researcher then scored the nurse in this section on

the NAF (Appendix O) based on the completion of the indicated action to “clarify the duplicate Pantoprazole order with the medical doctor.” This action is one in which the researcher changed the indication action based on faculty preference.

Diabetic ketoacidosis, Site One. During the simulation about a patient with diabetic ketoacidosis at Site One, “validate intravenous insulin dose with second nurse” was the indicated action included on the NAF. For this simulation, the patient had blood glucose readings greater than 200 mg/dL in the two sections. Thus, administration of regular intravenous insulin was ordered. The researcher then scored the nurses in these sections on the NAF (Appendix P) based on the completion of the indicated action “validate intravenous insulin dose with second nurse.” The two sections in this scenario are areas in which the researcher changed the indicated action based on faculty preference.

Acute coronary syndrome, Site Two. During the acute coronary syndrome simulation at Site Two, “retrieve new intravenous fluid bag” was the indicated action included on the NAF (Appendix Q). In this simulation, a Dextrose in Lactated Ringers solution was ordered but the most readily available intravenous fluid on the medication cart was a Dextrose 5% in Lactated Ringers with a 20 meq Potassium solution. Thus, the retrieval of the ordered solution was the indicated action. In the second and third sections, “retrieve an adult sized nasal cannula” was the indicated action included on the NAF. The most readily available oxygen device in this simulation was a pediatric nasal cannula. Since the patient was an adult, retrieval of a new nasal cannula was indicated. The researcher then scored the primary nurses during the two sections on the

NAF (Appendix R) based on the completion of the indicated action “retrieve an adult sized nasal cannula.”

Chronic obstructive pulmonary disease, Site Two. During the simulation of a chronic obstructive pulmonary disease patient at Site Two, “secure peripheral intravenous line” was the indicated action included on the NAF (Appendix S). In this simulation, there was an intentionally loose peripheral intravenous line on the patient. Thus, securing the peripheral intravenous line was the indicated action. In the second and third sections, “place urinary catheter on a non-movable part of bedframe” was the indicated action included on the NAF. In this simulation, the urinary catheter was secured to a lowered bed side-rail so that it was in contact with the ground. The researcher then scored the nurse in this section on the NAF (Appendix T) based on the completion of the indicated action “place urinary catheter on a non-movable part of bedframe.”

Cerebrovascular accident, Site Two. During the simulation of a cerebrovascular accident at Site Two, “raise two bed side-rails” was the indicated action included on the NAF (Appendix U) for all three sections. In this simulation, all four of the patient’s bed side-rails were intentionally placed in the lowered position. Thus, elevating two of the patient’s bedside rails was the indicated action. The researcher then scored the primary nurses in each of the three sections on the NAF based on the completion of the indicated action of “raising two bed side-rails.”

Sepsis, Site Two. During the simulation of a septic patient at Site Two, "verify patient code status" was the indicated action included on the NAF (Appendix V). In this simulation, the patient did not wear a code-status wristband. Thus, addressing the patient's code status was the indicated action. The researcher then scored the primary nurses in each of the three sections on the NAF based on the completion of the indicated action "verify patient code status."

Research Questions and Hypotheses

The following research questions were investigated in this study:

Is there a relationship between clinical judgment, as measured by the LCJR, and the completion of an indicated nursing action, as measured by the NAF, among seventh and eighth semester traditional prelicensure baccalaureate nursing students during a high fidelity simulation?

Is there a relationship between the dimension *Responding*, on the LCJR, and the completion of an indicated nursing action, as measured by the NAF, among seventh and eighth semester traditional prelicensure baccalaureate nursing students during a high fidelity simulation?

Based on research question one, the null and alternate hypotheses for research question one were:

$H_0{}^1$: There is no statistically significant relationship between clinical judgment, as measured by the LCJR, and the completion of an indicated nursing action, as measured by the NAF, among seventh and eighth semester traditional prelicensure baccalaureate nursing students during a high fidelity simulation.

H_a^1: There is a statistically significant relationship between clinical judgment, as measured by the LCJR, and the completion of an indicated nursing action, as measured by the NAF, among seventh and eighth semester traditional prelicensure baccalaureate nursing students during a high fidelity simulation.

Based on research question two, the null and alternate hypotheses were as follows:

H_0^2: There is no statistically significant relationship between the dimension *Responding,* on the LCJR, and the completion of an indicated nursing action, as measured by the NAF, among seventh and eighth semester traditional prelicensure baccalaureate nursing students during a high fidelity simulation.

H_a^2: There is a statistically significant relationship between the dimension *Responding,* on the LCJR, and the completion of an indicated nursing action, as measured by the NAF, among seventh and eighth semester traditional prelicensure baccalaureate nursing students during a high fidelity simulation?

Data Analysis for the Research Questions

A purposive sample of traditional prelicensure baccalaureate nursing students was obtained from both the main and satellite campuses of the university. Since the study participants were from two independent groups (students at the main campus and students at the satellite campus), the homogeneity of variance of the sample was determined first using Levene's test through analysis of variance (ANOVA) (Tabachnick & Fidell, 2013). Utilizing Levene's test of equality of error variances allowed for the evaluation of the

spread of scores between Site One and Site Two. Based on this calculation, distribution was determined to be equal F (1, 90) = .14, p = 0.71. As shown in Table 6, a statistically significant difference was not present between the distribution of scores at Site One and Site Two. Thus, the researcher combined the data from both sites. As a result, the research questions were examined using non-parametric statistical tests.

Table 6

Homogeneity of Variance Using Levene's Test

F	df1	df2	p
0.14	1	90	0.71

*Statistically Significant at $p < .05$

The data was analyzed using descriptive statistics and SPSS (v. 22) to answer the two research questions in this study. Non-parametric tests were used in this study because of the binary nature of the dependent variable (NAF) in both research questions and the purposive sampling process. The demographic data was also analyzed to describe the mean age, gender, race, previous education, and healthcare experience among participants. Based on a power analysis with $p < 0.05$ and a sample of 92 participants, the observed statistical power for this study was 0.97.

Research question one. Research question one was tested using a Spearman's rank order inter-correlation test to check the correlation between the research independent variable (LCJR scores) and the dependent variable (NAF scores). Data used for the analyses were interval (LCJR scores) and nominal

(NAF scores). The effect sizes were calculated using the coefficient of determination (r^2) to determine the strength of the correlation between LCJR and NAF scores. Correlation values, levels of significance, and coefficients of determination were also calculated. The level of significance was set at $p < .05$, and correlations were noted by r values > 0.300 or < -0.300 per the industry standard (Tabachnick & Fidell, 2013). In addition, t the skewness and kurtosis of the independent and dependent variables were calculated to determine the normalcy of the distribution and to identify if inferences could be made from the study's sample to a more general the population (Tabachnick & Fidell, 2013).

Research question two. Question two was tested using a Spearman's rank order inter-correlation test to check the correlation between the research independent variable (*Responding* scores) and the dependent variable (NAF scores). Data used for the analyses were interval (*Responding* scores) and nominal (NAF scores). In addition, the effect sizes were calculated using the coefficient of determination (r^2) to determine the strength of the correlation between Responding and NAF scores. Correlation values, levels of significance, and coefficients of determination were also calculated. The level of significance was set at $p < .05$, and correlations were noted by r values > 0.300 or < -0.300 per the industry standard (Tabachnick & Fidell, 2013). The skewness and kurtosis of the independent and dependent variables was calculated to determine the normalcy of the distribution and to identify if inferences could be made from the study's sample to a more general the population (Tabachnick & Fidell, 2013).

Summary

This chapter described the methods, participants, and research questions used in this research study. The participants in this study were nursing students in a traditional prelicensure baccalaureate nursing program. The purpose of this study was to describe the relationship between clinical judgment, as measured by the Lasater Clinical Judgment Rubric (LCJR), and the completion of an indicated nursing action (Lasater, 2007). This study also examined the relationship between *Responding,* one dimension on the LCJR, and the completion of an indicated nursing action. Data collection and analysis processes were also described in this chapter. The findings and their implications will be described and explained in Chapters IV and V.

Chapter IV Findings

Introduction

This study investigated the relationship between clinical judgment and the completion of an indicated nursing action during high-fidelity simulations among seventh and eighth semester traditional prelicensure baccalaureate nursing students. Clinical judgment aids in the provision of safe, quality patient care and is essential to professional nursing practice (AACN, 2008; Gerdeman, Lux, & Jacko, 2013). Clinical judgment involves noticing patient cues, developing interpretations and forming hypotheses, responding through nursing action, and evaluating the actions that occurred through reflection (Tanner, 2006). In the presence of poor or ineffective clinical judgment, patients' health and well-being can be at risk in the way in which nurses respond, or act in a clinical situation (Gordon et al., 1994; Johnson et al., 2012; Regan-Kubinski, 1991; Standing, 2008; Tanner, 2006). Nursing education research must therefore, appraise and evaluate action completion when examining students' clinical judgment.

It is unclear if the Lasater Clinical Judgment Rubric (LCJR), a commonly used tool for measuring clinical judgment, accounts for action completion (Lasater, 2007). One way in which nursing faculty and researchers can support the provision of safe and quality patient care and appraise and evaluate action is through the use of the LCJR and an indicated action completion tool. This can be accomplished by controlling the indicated nursing actions during high fidelity simulations. In this study, the relationship between clinical judgment and the completion of an indicated nursing action were examined using two instruments:

the LCJR and the Nursing Action Form (NAF). This chapter will review the descriptive statistics from this study as well as address the two research questions:

Is there a relationship between clinical judgment, as measured by the LCJR, and the completion of an indicated nursing action, as measured by the NAF, among seventh and eighth semester traditional prelicensure baccalaureate nursing students during a high fidelity simulation?

Is there a relationship between the dimension *Responding*, on the LCJR, and the completion of an indicated nursing action, as measured by the NAF, among seventh and eighth semester traditional prelicensure baccalaureate nursing students during a high fidelity simulation?

Descriptive Statistics

The Lasater Clinical Judgment Rubric

The LCJR was used to measure the clinical judgment of seventh and eighth semester traditional prelicensure baccalaureate nursing students who participated in this study. Participants were scored on the LCJR during observations of high fidelity simulations and subsequent debriefing at one of two campus sites from the same nursing program and medical/surgical course. At Site One, six participants were scored each week over nine weeks. At Site Two, six participants were scored each week over seven weeks. In total, 92 participants were scored using the LCJR. The data for the total sample (N = 92, M = 33.63, SD = 2.53) depicts the mean LCJR score for all participants in this

study and is comprised of both Site One (*N* = 50, *M* = 33.02, *SD* = 2.51) and Site Two (*N* = 42, *M* = 34.29, *SD* = 2.37). Table 7 displays the mean scores and standard deviations for each of the items on the instrument at Site One. Table 8 displays the mean scores and standard deviations for each of the items on the instrument at Site Two, and Table 9 displays the combined mean scores and standard deviations from both Site One and Site Two.

Table 7

Site One: LCJR Descriptive Statistics

	N	Minimum Score	Maximum Score	Mean	Standard Deviation
LCJR Total	50	27	40	33.02	2.51
Noticing	50	7	12	8.98	0.86
Interpreting	50	4	8	5.72	0.70
Responding	50	9	15	11.82	1.11
Reflecting	50	5	8	6.48	0.78
Valid *N*	50				

Table 8

Site Two: LCJR Descriptive Statistics

	N	Minimum Score	Maximum Score	Mean	Standard Deviation
LCJR Total	42	28	39	34.29	2.37
Noticing	42	6	10	8.78	0.78
Interpreting	42	4	9	6.00	0.91
Responding	42	10	15	12.52	1.33
Reflecting	42	5	8	6.97	0.78
Valid *N*	42				

Table 9

Combined LCJR Descriptive Statistics

	N	Minimum Score	Maximum Score	Mean	Standard Deviation
LCJR Total	92	27	40	33.63	2.53
Noticing	92	6	12	8.90	0.83
Interpreting	92	4	9	5.85	0.81
Responding	92	9	15	12.15	1.27
Reflecting	92	5	8	6.71	0.82
Valid *N*	92				

Skewness and kurtosis were calculated for the independent variable (LCJR scores) using SPSS (v. 22) descriptive frequency distribution analysis in order to examine the distribution of participant scores. The LCJR skewness was determined to be near zero (skewness = .13, SES = .25) and LCJR kurtosis to be approaching zero (kurtosis = .34, SEK = .50, Table 10). The LCJR variable was thus weakly skewed positively but not substantially (Tabachnick & Fidell, 2013). This means that the range of LCJR scores was symmetrical. Likewise, the LCJR variable kurtosis was determined to not be substantial, but rather near zero (Tabachnick & Fidell, 2013). This means that the LCJR variable was mesokurtic, or displayed statistical equality. The LCJR scores were thus normally distributed in this study. This can be visually observed in Figure 1. Having a normal and symmetrical distribution provides support for making inferences from the study's sample to a more general population.

Table 10

Skewness and Kurtosis

		LCJR	Noticing	Interpreting	Responding	Reflecting
N	Valid	92	92	92	92	92
	Missing	0	0	0	0	0
Mean		33.598	8.891	5.848	12.141	6.707
Std. Error of Mean		.2628	.0867	.0846	.1317	.0854
Std. Deviation		2.5205	.8315	.8111	1.2630	.8192
Skewness		.135	.091	.793	.163	-.386
Std. Error of Skewness		.251	.251	.251	.251	.251
Kurtosis		.344	3.420	2.880	.354	-.220
Std. Error of Kurtosis		.498	.498	.498	.498	.498
Minimum		27.0	6.0	4.0	9.0	5.0
Maximum		40.0	12.0	9.0	15.0	8.0

The r Skewness and kurtosis for the independent variable (*Responding*) were also calculated using SPSS descriptive frequency distribution analysis in order to examine the distribution of participant scores. *Responding* skewness was found to be approaching zero (skewness = .16, SES = .25) and kurtosis was found to be approaching zero (kurtosis = .35, SES = .50) (see Table 10). Therefore, t the *Responding* variable was determined to be weakly skewed positively but not substantially (Tabachnick & Fidell, 2013). This means that the range of *Responding* scores was symmetrical, and resembled a normal distribution. This can be visually observed in Figure 2. The findings of a normal and symmetrical distribution provide support for making inferences from this sample to a more general population.

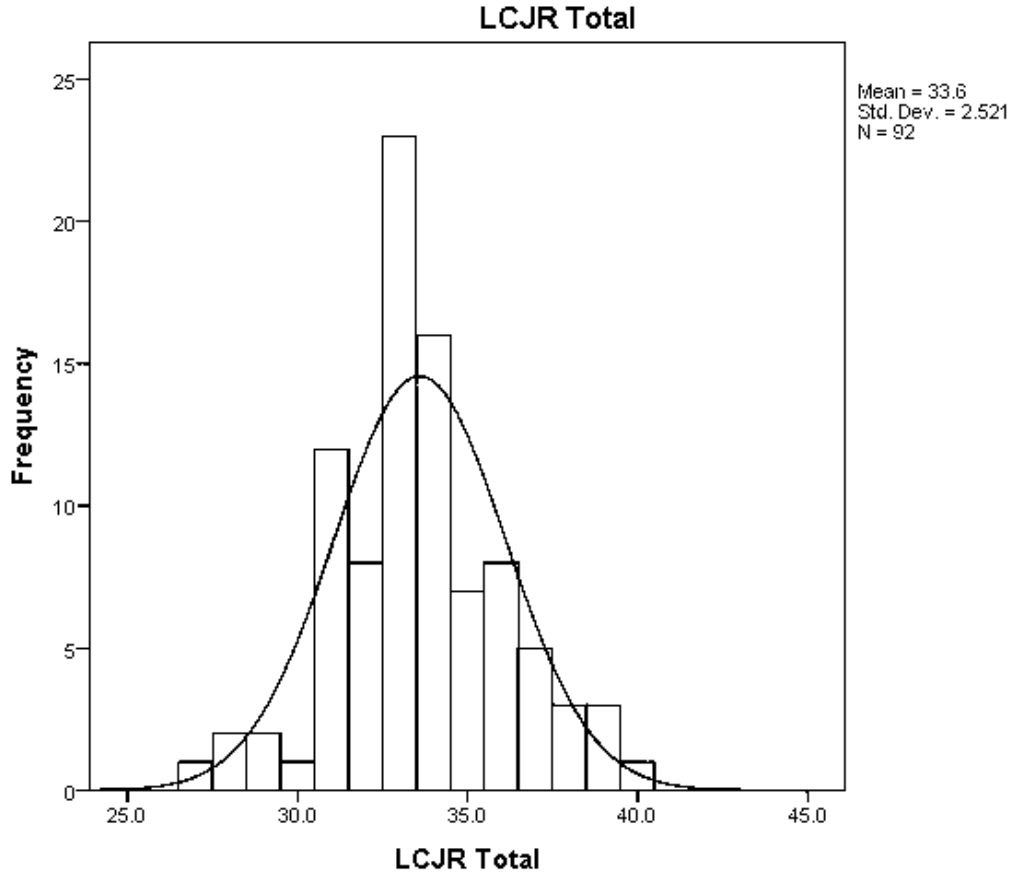

Figure 1. Distribution of the LCJR scores.

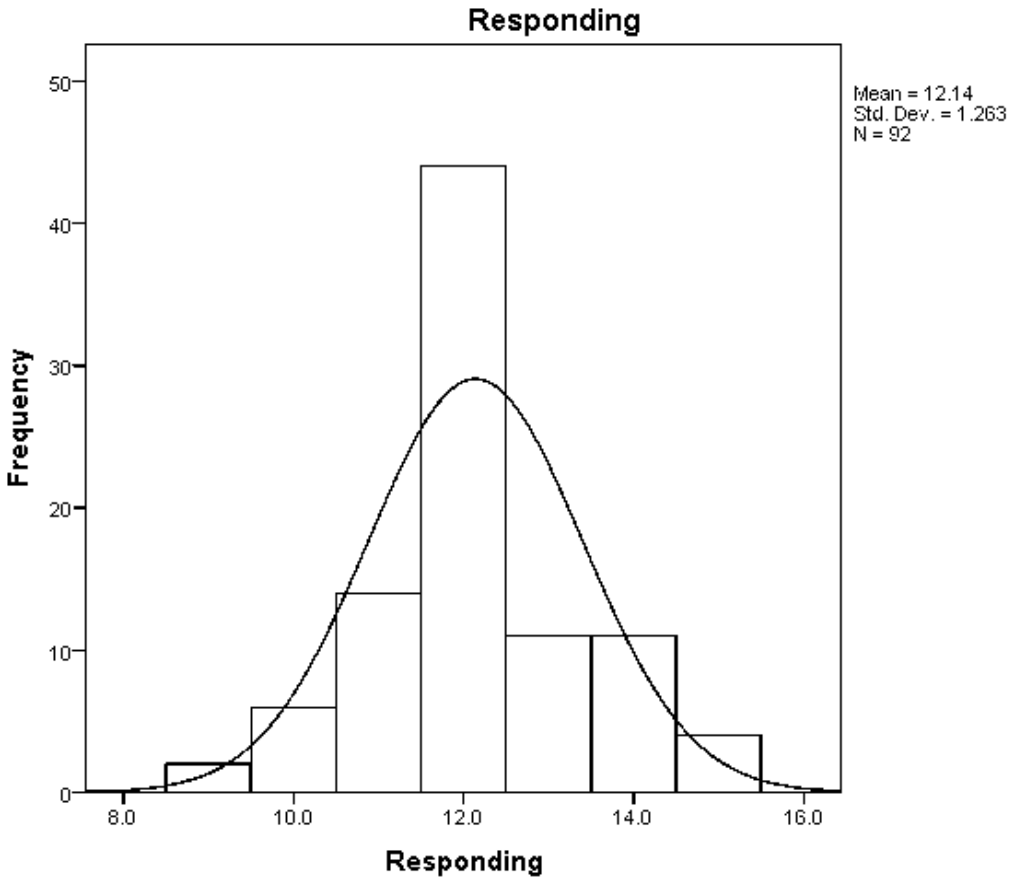

Figure 2. Distribution of *Responding* scores.

The Nursing Action Form (NAF)

The Nursing Action Form (NAF) was used to measure participants' completion of an indicated nursing action assigned to each of the high-fidelity simulations. NAF scores were determined at the end of the observation of a high-fidelity simulation. Participants were assigned a score of one if an indicated action was completed and a score of zero if it was not. At Site One, six participants were scored each week over nine weeks. At Site Two, six participants were scored each week over seven weeks. Although a total of 94 NAF scores were calculated, only 92 (97.9%) had complete LCJR scores and

could be used in this study. The frequencies for the NAF are displayed in Table 11. Eighty-two (89.1%) of the 92 participants received a score of zero on the NAF. This means that 82 participants in this study did not complete an indicated action.

Table 11

Frequencies for the NAF

	F	Percent
Indicated Action Not Completed	82	89.1
Indicated Action Completed	10	10.9
Total	92	100.0

The mean NAF score was 0.11 with an *SD* of 0.31 (Table 12). Based on the binary nature of the scores on the NAF, participants were scored as either zero or one on the instrument. On average, 11% of the indicated actions observed in this study were completed. Thus, 82 (89.1%) of the 92 received a score of zero and 10 of the 92 participants received a score of one on the NAF.

Table 12

NAF Descriptive Statistics

Valid *N*	92
Missing	0
Mean	0.11
Std. Deviation	0.31
Minimum	0.00
Maximum	1.00

Table 13

NAF Scores by Site and Action

Site	Action	Incomplete Action	Completed Action
1	Validate Heparin bolus with second nurse	6	1
1	Administer Atropine intravenous push	6	1
1	Apply non-petrolatum occlusive dressing to chest-tube site	5	
1	Place hemostat, spare dressings, and sterile water at bedside	5	1
1	Decrease intravenous fluids	12	2
1	Retrieve new intravenous fluid bag	6	1
1	Clarify duplicate Pantoprazole 80mg intravenous push order with physician	6	1
1	Validate intravenous Insulin dose with second nurse	4	
2	Retrieve new intravenous fluid bag	8	
2	Retrieve adult sized nasal cannula	4	
2	Secure peripheral intravenous line	4	
2	Place urinary catheter on non-movable part of bed	8	3
2	Raise two bedside rails	12	
2	Verify patient code status	6	
Total *n*:		82	10

Table 13 displays the completion of an indicated nursing action for the high fidelity simulations and the NAF scores by site. There were a total of 13 different indicated actions observed throughout all of the simulation scenarios. As shown in Table 13, one participant completed an indicated action of validating the Heparin bolus with a second nurse, one participant completed administering Atropine intravenous push, one participant completed placing a hemostat, spare dressings, and sterile water at bedside, two participants completed decreasing intravenous fluids, one participant completed retrieving a new intravenous fluid bag, one participant completed clarifying the duplicate Pantoprazole 80mg

intravenous push order with the physician, and three participants completed placing the urinary catheter on a non-movable part of the bed. Therefore, 10 (10.9%) of the 92 cases demonstrated completion of an indicated nursing action. A chi-square goodness of fit was conducted and revealed that the distribution of NAF scores was statistically significant $p < .05$. The overwhelming majority of study participants thus received a score of zero meaning that the indicated nursing action was rarely completed.

Testing the Research Questions

The two research questions in this study were each examined using descriptive statistics. In the first research question, non-parametric Spearman's rank order inter-correlation testing was used to examine the relationship between clinical judgment (LCJR scores) and the completion of an indicated nursing action (NAF scores). Non-parametric testing was used in this study because of the nature of the data; the dependent variable (NAF scores) was designed to be a two categorical nominal variable and the independent variable (LCJR scores) was summed interval scale data based on ordinal response data. Furthermore, the sample was purposive and not randomized.

Non-parametric Spearman's rank order inter-correlation testing was used to address the second research question examining the relationship between *Responding* scores, on the LCJR, and the NAF scores. As with the first research question, non-parametric Spearman's rank order inter-correlation testing was justified given the nature of the data; the dependent variable (NAF scores) was a

two-categorical nominal variable and the independent variable (*Responding* scores) was summed interval scale data based on ordinal response data.

Research Question One

Is there a relationship between clinical judgment, as measured by the LCJR, and the completion of an indicated nursing action, as measured by the NAF, among seventh and eighth semester traditional prelicensure baccalaureate nursing students during a high fidelity simulation?

The relationship between participants' LCJR scores and NAF scores was examined using Spearman's rank order inter-correlation testing to evaluate the hypothesis that there is a meaningful relationship between clinical judgment, as measured by the LCJR, and the completion of indicated nursing action as measured by the NAF. Statistical analyses depicted in Table 14 showed the relationship to be very weak according to industry standard as stated by Taylor (1990). A visual representation of this relationship is provided in Figure 3. An analysis of the correlation coefficient showed that the relationship between LCJR scores and NAF scores was not statistically significant (r = .06, *p* = .56).

Table 14

Strength of Association of Spearman's Correlation

Size of Correlation	Interpretation
.90 to 1.00 (-.90 to -1.00)	Very high positive (negative) correlation
.68 to .89 (-.68 to -.89)	Strong positive (negative) correlation
.36 to .67 (-.36 to -.67)	Moderate positive (negative) correlation
.10 to .37 (-.10 to -.37)	Weak positive (negative) correlation
.00 to .10 (.00 to -.10)	Very weak correlation

*Taylor (1990)

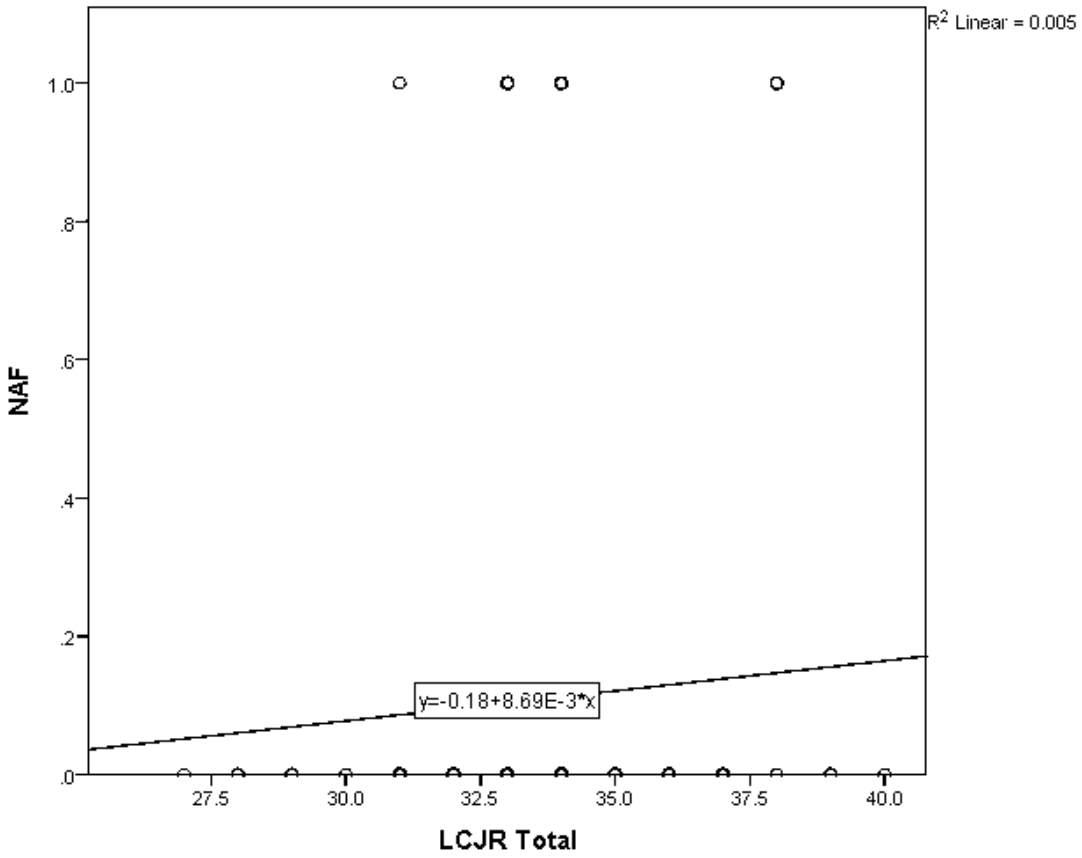

Figure 3. Relationship between clinical judgment and the completion of an indicated nursing action.

While the findings illustrated in Table 15 indicated that there was a very weak correlation (using Spearman's r) between clinical judgment scores and the completion of an indicated nursing action, statistical significance was not reached $r_s(90) = .06$, $p = .56$, effect size $r^2 = .004$ (Taylor, 1990). Correlations were considered statistically significant at $p < .05$ as based on industry standard (Tabachnick & Fidell, 2013). Therefore, the findings of this study fail to reject the hypothesis that there is no statistically significant relationship between clinical judgment, as measured by the LCJR, and the completion of an indicated nursing

action among seventh and eighth semester traditional prelicensure baccalaureate nursing students.

Table 15

Spearman's Rank Order Inter-Correlations

		NAF	LCJR	Responding
NAF	*r*	1.000	.061	.034
	Sig.	.	.562	.746

* *r* = Correlation Coefficient, Sig. = Statistically Significant at $p < .05$

Research Question Two

The second research question was:

Is there a relationship between the dimension *Responding*, on the LCJR, and the completion of an indicated nursing action, as measured by the NAF, among seventh and eighth semester traditional prelicensure baccalaureate nursing students during a high fidelity simulation?

The relationship between participants' *Responding* scores and NAF scores was examined using a Spearman's rank order inter-correlation test to evaluate the hypothesis that a statistically significant relationship existed between *Responding*, on the LCJR, and the completion of an indicated nursing action. Statistical analyses as depicted in Table 14 showed the relationship to be very weak, as defined by Taylor (1990), and can be assessed by visual inspection on the scatterplot in Figure 4. An analysis of the correlation coefficient showed that the relationship between *Responding* and the completion of an indicated nursing action was not statistically significant ($r = .03$, $p = .75$).

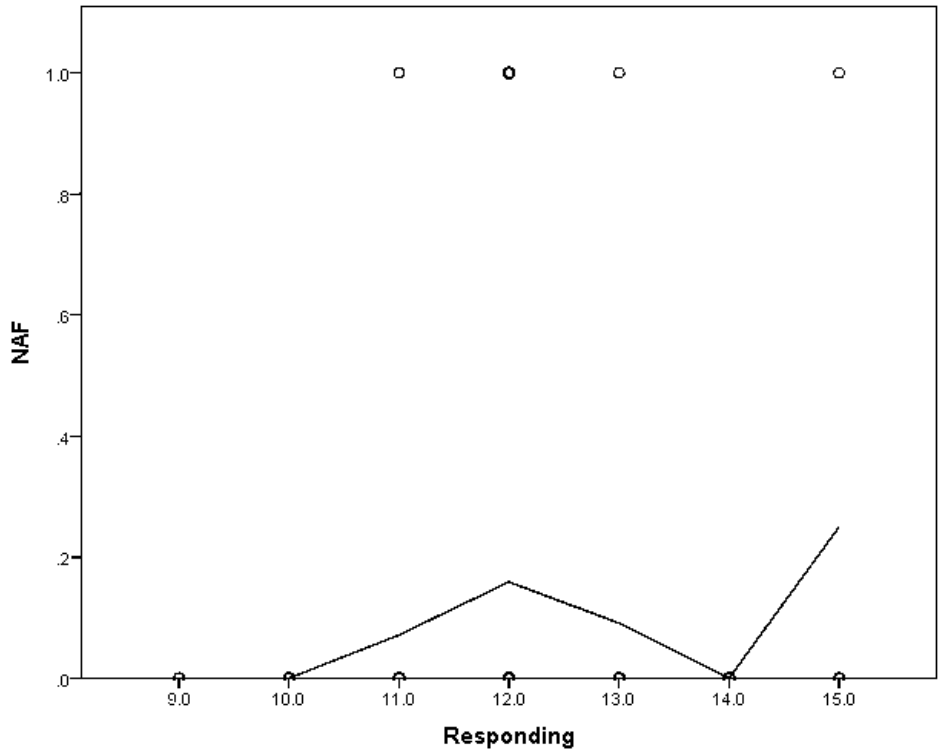

Figure 4. Relationship between *Responding* and the completion of an indicated nursing action.

While the findings presented in Table 15 demonstrate that there was a very weak correlation (using Spearman's r) between *Responding*, on the LCJR, and the completion of an indicated nursing action, statistical significance was not reached $r_s(90) = .03$, $p = .75$, effect size $r^2 = .00$ (Taylor, 1990). Therefore, the findings fail to reject the hypothesis that there was no statistically significant relationship between *Responding*, on the LCJR, and the completion of an indicated nursing action among seventh and eighth semester traditional prelicensure baccalaureate nursing students was accepted. Correlations were considered statistically significant at $p < .05$ levels as based on standard significance levels (Tabachnick & Fidell, 2013).

Analyses of the Relationship between *Noticing, Interpreting,* and *Reflecting* and the Completion of an Indicated Nursing Action

The relationship between participants' *Noticing, Interpreting* and *Reflecting* scores and NAF scores was also examined. These additional analyses were conducted in an effort to identify if any of the dimensions of the LCJR were related to the completion of an indicated nursing action. As a result, the skewness and kurtosis for the variables *Noticing, Interpreting,* and *Reflecting* was also computed in order to examine the distribution and fit of each dimension's scores.

Noticing skewness was found to be approaching zero (skewness = .09, SES = .25) and kurtosis was found to be 3.42 (see Table 10). Therefore, the *Noticing* variable on the LCJR was determined to be weakly skewed positively but not substantially (Tabachnick & Fidell, 2013). The range of *Noticing* scores was thus symmetrical. Even in light of this, the data was still not considered normally distributed, as the kurtosis for the *Noticing* variable was substantially positive. Therefore, it is difficult to make inferences from the study sample of *Noticing* scores to a more general population. This can be visually observed in Figure 5.

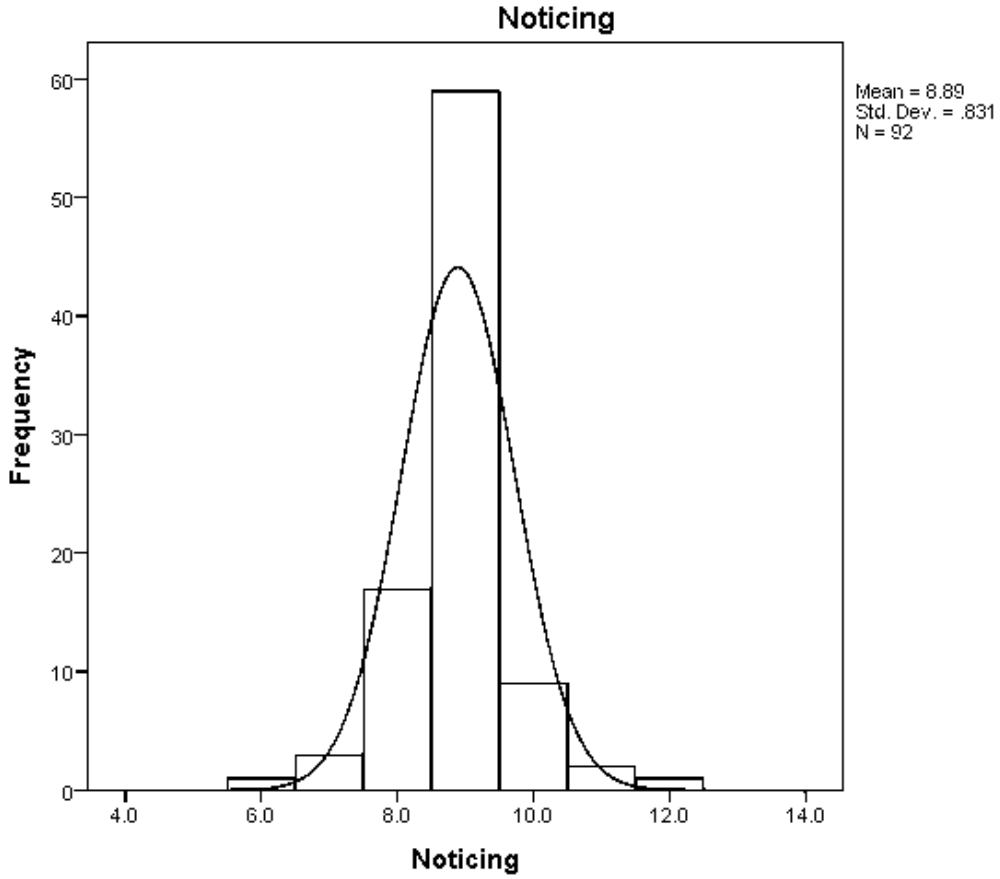

Figure 5. Distribution of *Noticing* scores.

Interpreting skewness was found to be approaching 1 (skewness = .79, SE = .25) and kurtosis was found to be 2.88 (see Table 10). Therefore, the *Interpreting* variable on the LCJR was determined to demonstrate a positive skew. The range of *Interpreting* scores was thus asymmetrical, and they were not normally distributed. Therefore, it is difficult to make inferences from the sample of *Interpreting* scores in this study to a more general population. This can be visually observed in Figure 6.

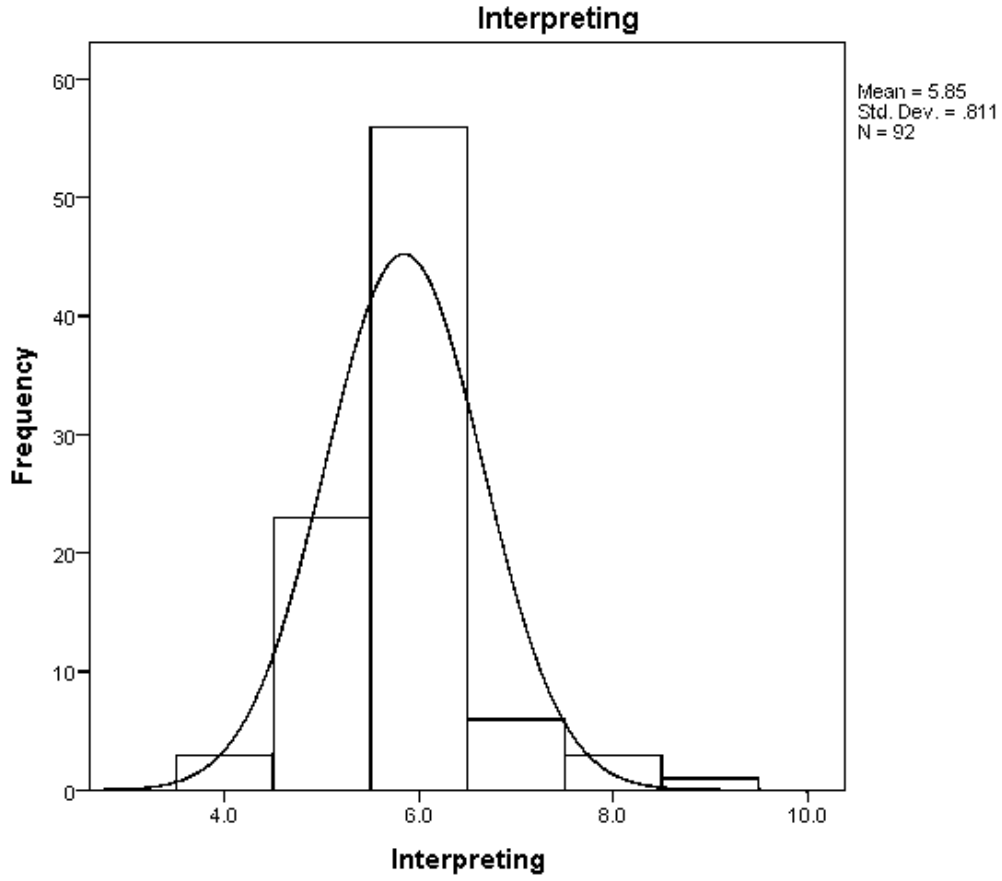

Figure 6. Distribution of *Interpreting* scores.

The *Reflecting* skewness was found to be approaching zero (skewness = -.39, SES = .25) and kurtosis was found to be approaching zero (kurtosis = -.22, SES = .50) as shown in Table 10. Therefore, the *Reflecting* variable on the LCJR was determined to be weakly skewed negatively, but not substantially (Tabachnick & Fidell, 2013). Likewise, the *Reflecting* variable kurtosis was determined to not be substantial, but rather near zero (Tabachnick & Fidell, 2013). The range of *Reflecting* scores was thus symmetrical, and they were normally distributed. This provides support for the drawing of inferences from the

Reflecting scores in this study's sample to a more general population. The visual representation of *Reflecting* skewness and kurtosis is provided in Figure 7.

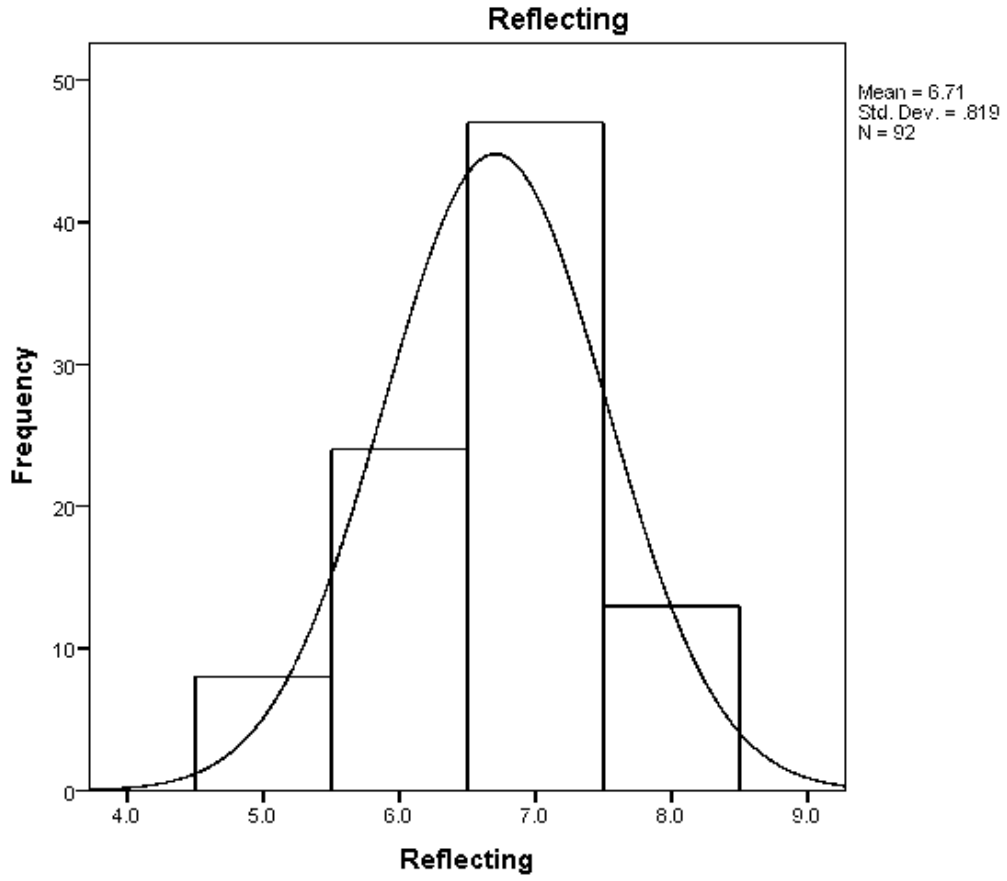

Figure 7. Distribution of *Reflecting scores.*

A Spearman's rank order inter-correlation test was then conducted to evaluate if a meaningful relationship was present between *Noticing*, on the LCJR, and the completion of indicated nursing action among seventh and eighth semester traditional baccalaureate nursing students. Analyses showed the relationship to be very weak as defined by Taylor (Table 14, 1990). Further investigation of the correlation coefficient showed that the relationship between *Noticing* scores and NAF scores was not statistically significant (r = .01, *p* = .90). While findings indicated that there was a very weak correlation (using

Spearman's r) between *Noticing* scores and the completion of an indicated nursing action, statistical significance was not reached $r_s(90) = .01$, $p = .90$, effect size $r^2 = .00$ (Table 16, Figure 8). Therefore, a statistically significant relationship was not present between *Noticing*, on the LCJR, and the completion of an indicated nursing action among seventh and eighth semester traditional prelicensure baccalaureate nursing students. Correlations were considered statistically significant at $p < .05$ as based on industry standard (Tabachnick & Fidell, 2013).

A Spearman's rank order inter-correlation test was also conducted to evaluate if a meaningful relationship was present between *Interpreting*, on the LCJR, and the completion of an indicated nursing action among seventh and eighth semester traditional prelicensure baccalaureate nursing students. An analysis of the correlation coefficient showed a weak relationship between *Interpreting* and NAF scores that was not statistically significant ($r = .17$, $p = .12$) (Table 16, Figure 9). The strength of the association was defined by industry standard as described by Taylor (Table 14, 1990). The findings indicated that there was a weak correlation (using Spearman's r) between *Interpreting* and the completion of an indicated nursing action, there was no statistical significance $r_s(90) = .17$, $p = .12$, effect size $r^2 = .03$. Therefore, a statistically significant relationship was not present between *Interpreting*, on the LCJR, and the completion of indicated nursing action among seventh and eighth semester prelicensure baccalaureate nursing students. Correlations were considered

statistically significant at $p < .05$ as based on standard significance values (Tabachnick & Fidell, 2013).

Table 16

Spearman's Rank Order Inter-Correlations for the Additional Analyses

		Noticing	Interpreting	Reflecting
NAF	*r*	.013	.165	-.098
	Sig.	.901	.117	.353

* r = Correlation Coefficient, Sig. = Statistically Significant at p < .05

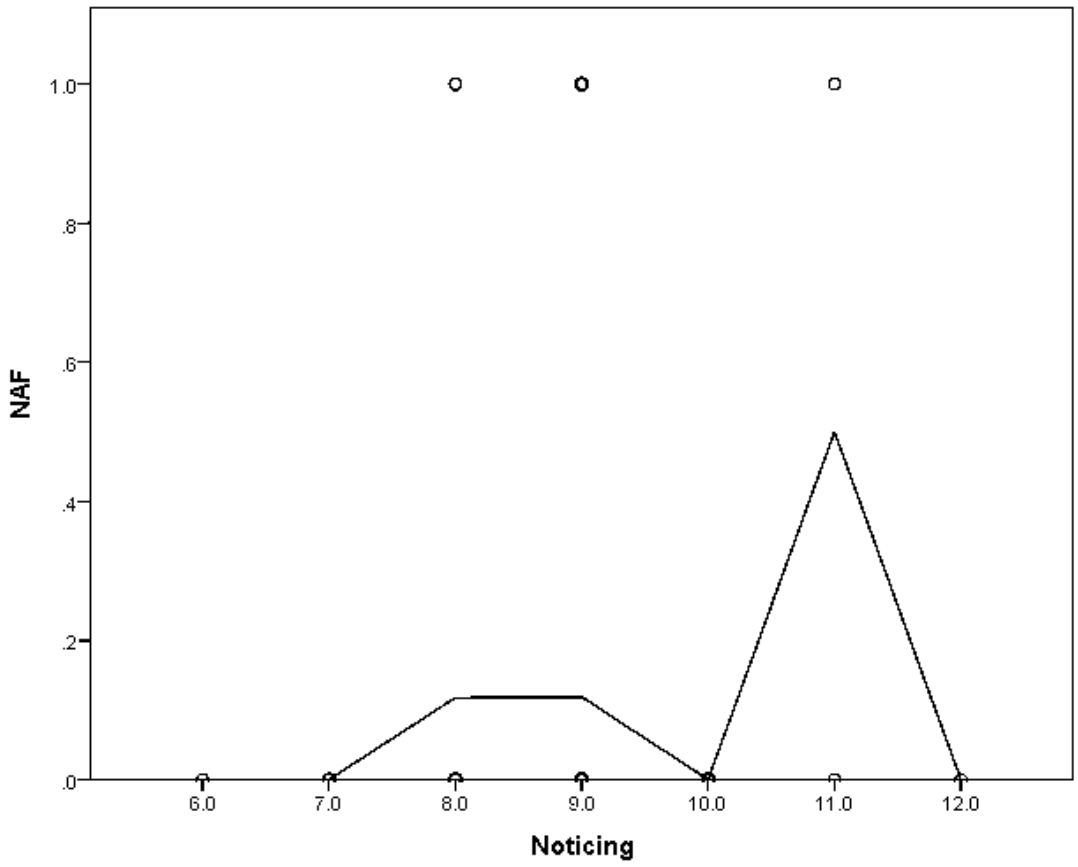

Figure 8. Relationship between *Noticing* and the completion of an indicated nursing action.

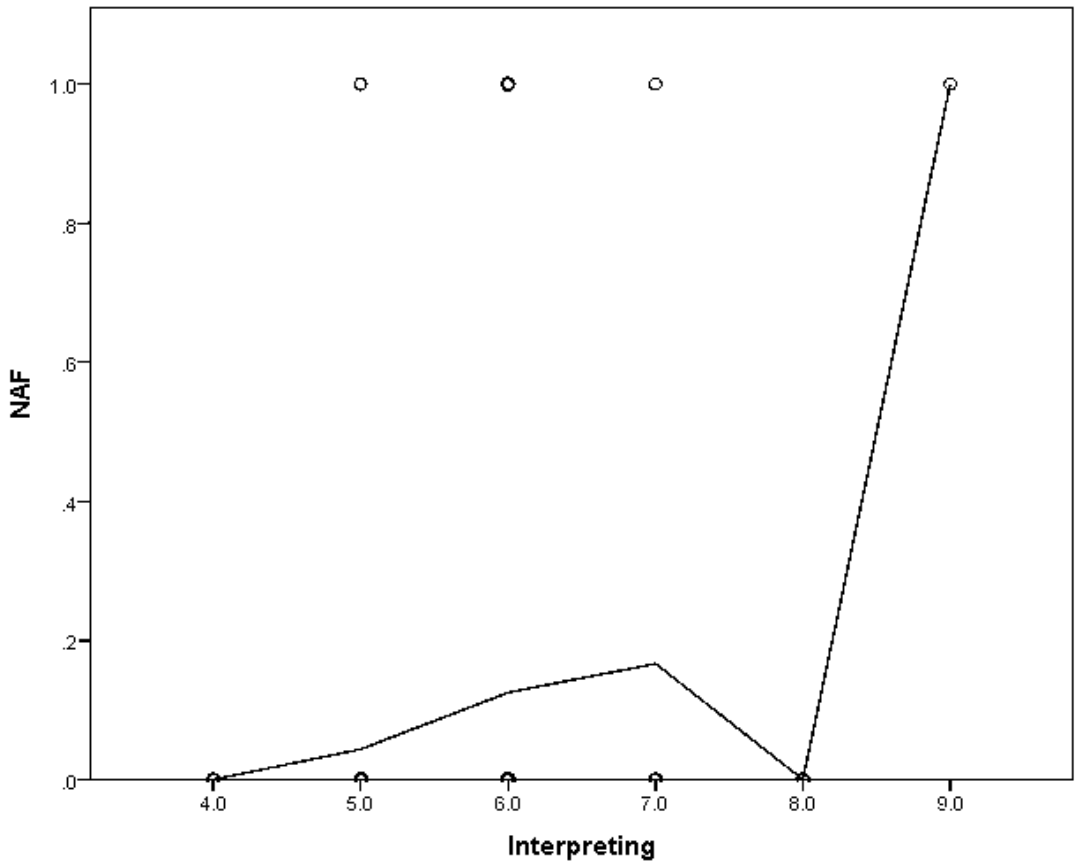

Figure 9. Relationship between *Interpreting* and the completion of an indicated nursing action.

A Spearman's rank order inter-correlation test was additional conducted to evaluate whether a meaningful relationship was present between *Reflecting*, on the LCJR, and the completion of an indicated nursing action among seventh and eighth semester traditional prelicensure baccalaureate nursing students. An analysis of the correlation coefficient showed a very weak negative relationship between *Reflecting* and NAF scores that was not statistically significant (r = -.10, *p* = .35) (Table 16, Figure 10). The findings indicated that there was a very weak negative correlation (using Spearman's r) between *Reflecting* and the completion of indicated nursing action, there was no statistical significance $r_s(90) = -.10$, *p* =

.35, effect size r^2 = .01. Therefore, a statistically significant relationship was not present between *Reflecting*, on the LCJR, and the completion of an indicated nursing action among seventh and eighth semester traditional prelicensure baccalaureate nursing students. Correlations were considered statistically significant at $p < .05$ levels as based on standard significance values (Tabachnick & Fidell, 2013).

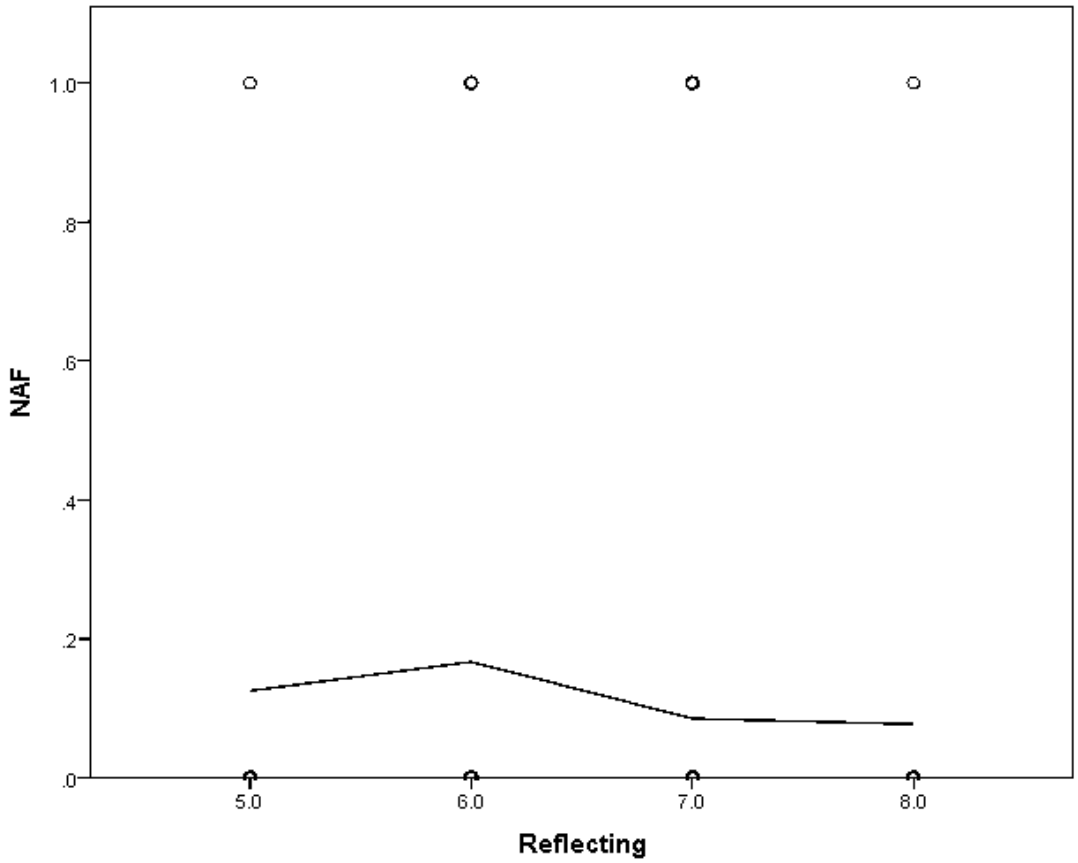

Figure 10. Relationship between *Reflecting* and the completion of an indicated nursing action.

Summary

In this chapter, the data analysis was presented that addressed the research questions. The statistical findings for the first research question

identified that a very weak relationship was present between clinical judgment, as measured by the LCJR, and the completion of an indicated nursing action. This correlation however, was not statistically significant.

The statistical findings for the second research question identified that a very weak relationship was present between *Responding,* on the LCJR, and the completion of an indicated nursing action. This relationship however, also was not statistically significant. Additional analyses were completed to assess for relationships between the additional dimensions of the LCJR (*Noticing, Interpreting, Reflecting*) and the NAF, however the relationships were weak to very weak and also not statistically significant. Chapter V will summarize and describe these findings and discuss the implications for prelicensure baccalaureate nursing education and research.

Chapter V Discussion

Introduction

Chapter V includes a discussion of the findings from this study related to traditional prelicensure baccalaureate nursing students' clinical judgment and completion of an indicated nursing action. In the prior chapter, a discussion and analysis of the data was reported. Chapter V will be comprised of a summary of this study, discussion of the study's findings, an examination of the limitations, implications for practice, as well as recommendations for future research and concluding statements. Recommendations for future research will be offered and closing comments regarding the study will be presented.

Summary of the Study

The researchers across nursing, medicine, and allied health professions consistently describe clinical judgment as a means where by patient care is determined and completed in the form of an action (Bergeron, 2006; Bloom et al., 2001; Gordon et al., 1994; Lee et al., 2014; Regan-Kubinski, 1991; Tanner, 2006). In nursing, this is exemplified in one commonly used model, the Clinical Judgment Model, in which *action* is embedded within the *Responding* aspect of clinical judgment (Tanner, 2006). When comparing Tanner's (2006) model to the measureable dimensions in the Lasater Clinical Judgment Rubric (LCJR; Lasater, 2007), it is unclear if the *Responding* dimension on the rubric actually translates to the completion of an indicated action. The goal of this study was to evaluate the relationship between clinical judgment, as measured by the LCJR,

and the completion of an indicated nursing action. This study also looked for a relationship between the dimension *Responding*, on the LCJR, and the completion of an indicated nursing action.

This study had two research questions:

Is there a relationship between clinical judgment, as measured by the LCJR, and the completion of an indicated nursing action, as measured by the NAF, among seventh and eighth semester traditional prelicensure baccalaureate nursing students during a high fidelity simulation?

Is there a relationship between the dimension *Responding*, on the LCJR, and the completion of an indicated nursing action, as measured by the NAF, among seventh and eighth semester traditional prelicensure baccalaureate nursing students during a high fidelity simulation?

Research questions one and two were answered quantitatively from the data obtained from participant scores on the LCJR and the NAF. Research question one was addressed using the results from a Spearman's rank order inter-correlation test comparing participants' total LCJR and NAF scores. To address question two, t a Spearman's rank order inter-correlation test was used to compare participants' *Responding*, on the LCJR, and NAF scores. The results addressed relationships between clinical judgment and *Responding*, on the LCJR, with the completion of an indicated nursing action.

Discussion and Findings

The purpose of this study was to describe the relationship between seventh and eighth semester traditional prelicensure baccalaureate nursing students' clinical judgment, as measured by the LCJR, and the completion of an indicated nursing action, as measured by the Nursing Action Form (NAF). This study also aimed to describe the relationship between seventh and eighth semester traditional prelicensure baccalaureate nursing students' *Responding*, on the LCJR, and the completion of an indicated nursing action, as measured by the NAF.

Using the LCJR to score clinical judgment provides nursing faculty and researchers with a way to measure aspects of clinical judgment during a simulation. Although the LCJR was originally intended as a means for facilitating clinical judgment discussions between nursing faculty and students, it has been used as an instrument for quantifying clinical judgment and providing conclusions regarding nursing interventions (Ashcraft et al., 2013; Blum et al., 2010). To best understand the LCJR, one must understand the theoretical framework from which it was developed: Tanner's (2006) Clinical Judgment Model. The Clinical Judgment Model (Tanner, 2006) consists of four aspects including *Noticing*, *Interpreting*, *Responding* and *Reflecting*. The four aspects comprise the dimensions on the LCJR and as such, provide observable means for appraising students' clinical judgment. Although the four aspects of Tanner's (2006) model are included on the LCJR, *Responding* on the rubric does not include action or nursing outcomes that were identified as integral to the *Responding* dimension

by Tanner (2006, p. 208). In contrast, the LCJR associated the *Responding* dimension with exhibiting calmness and confidence, clearly communicating, planning interventions, and displaying skillfulness (Lasater, 2007, p. 500-501). Although the LCJR accounts for skillfulness in *Responding,* it does not always equate to the completion of an indicated action. For example, in one of the simulation scenarios with a patient experiencing symptomatic bradycardia, the patient reported a symptom of crushing chest pain. In this situation, the student nurse could be skillful in recognizing the signs and symptoms of a potential myocardial infarction and how to treat it. Displaying skillfulness in this instance would be visualized through the administration of nitroglycerin, aspirin, and oxygen but the actual indicated action would be to resolve the underlying cause of the chest pain (symptomatic bradycardia) with atropine. Therefore, being skillful does not necessarily lead to completion of an indication action. Furthermore, in Tanner's (2006) model, two processes that occur in the *Reflecting* dimension include "reflection in action and reflection on action" (p. 208). However, if the completion of an indicated nursing action is not accounted for in the *Responding* dimension of the LCJR, then the evaluation of the reflection in and on an action cannot occur. This study sought to address this issue by providing a means for faculty to observe nursing students during a simulation and score the completion of an indicated action with the use of a Nursing Action Form (NAF). Examining for relationships between student scores on the NAF and the LCJR then determines if the completion of an indicated action was related to clinical judgment, as measured by LCJR.

Research Question One

Is there a relationship between clinical judgment, as measured by the LCJR, and the completion of an indicated nursing action, as measured by the NAF, among seventh and eighth semester traditional prelicensure baccalaureate nursing students during a high fidelity simulation?

The findings from the Spearman's rank order inter-correlation test for research question one demonstrated a very weak relationship between clinical judgment, as measured by the LCJR, and the completion of an indicated nursing action. Furthermore, the results were not statistically significant. As a result, the findings fail to reject the hypothesis of the study that there is no statistically significant relationship between clinical judgment, as measured by the LCJR, and completion of an indicated nursing action, as measured by the NAF, among seventh and eighth semester traditional prelicensure baccalaureate nursing students during a high fidelity simulation. This means that when participants' clinical judgment was scored as *accomplished* or *exemplary* based on the LCJR, it was not synonymous with the completion of an indicated nursing action in this study. This finding demonstrates potential challenges with the way in which conclusions are drawn surrounding students' clinical judgment based on the methods in which the LCJR is used by nursing faculty and researchers. Within the discipline of nursing, *action* serves as a cornerstone to theories of clinical judgment and is supported as such in the literature (Bergeron, 2006; Bloom et al., 2001; Gordon et al., 1994; Kantar & Alexander, 2012; Lee et al., 2014; Regan-Kubinski, 1991; Tanner, 2006). Nursing faculty and researchers

evaluating students' clinical judgment should expect that clinical judgment be related to the completion of an indicated nursing action based on the supported models and theories (Gordon et al., 1994; Regan-Kubinski, 1991; Tanner, 2006).

In particular, Tanner's (2006) Clinical Judgment Model heavily emphasizes and clearly incorporates nursing action with clinical judgment. Given that Lasater (2007) intended that the LCJR quantify Tanner's (2006) conceptualization of clinical judgment, it is imperative that faculty and researchers use the rubric as such, or incorporate the completion of action into the scoring process (Coram, 2016; Lasater & Neilsen, 2009; Mariani et al., 2013; McMahon, 2013; Meyer, 2012; Schlairet & Fenster, 2012; Yuan et al., 2014).

When using the LCJR, a student with *exemplary* clinical judgment, should be expected to complete an indicated nursing action on the basis that clinical judgment involves noticing cues, developing interpretations, forming hypotheses, then responding "appropriately" through action, and reflecting on the action that occurred (Tanner, 2006, p. 208). However, this is not currently the case. A very weak relationship and a lack of statistical significance was demonstrated between clinical judgment, as measured by the LCJR, and the completion of an indicated action, as measured by the NAF. Therefore, using the LCJR to form implications surrounding nursing students' competency or interventions may be inaccurate as the LCJR does not necessarily appear to measure the completion of an indicated nursing action.

Since the data do not demonstrate a statistically significant relationship between clinical judgment, as measured by the LCJR, and the completion of an

indicated nursing action, findings from prior research using the LCJR should be interpreted cautiously. This is of particular concern in cases where the LCJR was used as a means for evaluating students' and nurses' responses from the standpoint of clinical skills or interventions (Ashcraft et al., 2013; Blum et al., 2010; Fenske et al., 2013). Even in cases in which students received high LCJR scores, clinical judgment scores may not necessarily relate to the completion of an indicated action according to the findings of this study. Even though students' mean LCJR scores reflected *accomplished* clinical judgment, only 10 out of the possible 92 indicated actions (11%) were actually completed in this study. An indicated action was thus not completed 89% of the time. Consequently, students with scores suggesting *accomplished* or *exemplary* clinical judgment, as measured by the LCJR, may in fact, not be. Therefore, nursing faculty and researchers using the LCJR as an evaluative measure of students' clinical judgment should be aware that the completion of an indicated action is not accounted for in the rubric scores.

Research Question Two

Is there a relationship between the dimension *Responding*, on the LCJR, and the completion of an indicated nursing action, as measured by the NAF, among seventh and eighth semester traditional prelicensure baccalaureate nursing students during a high fidelity simulation?

The *Responding* dimension was singled out amongst the other dimensions on the LCJR (*Noticing, Interpreting, Reflecting*) and examined it further because Tanner's (2006) Clinical Judgment Model specifies nursing

action as occurring during this dimension. In addition, pilot research suggested the existence of a correlation between *Responding* and indicated action completion (Fedko & Dreifuerst, 2016).

The findings from the Spearman's rank order inter-correlation for research question two revealed a very weak relationship between *Responding*, on the LCJR, and the completion of an indicated nursing action. Additionally, these results were not statistically significant. The findings from Research Question Two fail to reject the hypothesis of this study that a statistically significant relationship does not exist between *Responding*, on the LCJR, and the completion of an indicated nursing action, as measured by the NAF, among seventh and eighth semester traditional prelicensure baccalaureate nursing students during a high fidelity simulation. Therefore, nursing faculty and researchers using the LCJR to form implications surrounding nursing students' responses may be inaccurate, as the LCJR does not currently appear to measure the completion of an indicated nursing action in the *Responding* dimension.

Similar to the findings from the first research question, these results suggest that the LCJR may not be an effective means for nursing faculty and researchers to draw conclusions surrounding students' actions or interventions. In research studies across medicine and allied health, *Responding* in clinical judgment has been associated with the selection and completion of a behavior or action (Alan et al., 2013; Baylow et al., 2009; Yuan et al., 2014; Victor-Chmil et al., 2015). Further, across the theoretical frameworks in nursing, clinical

judgment consists of nursing interventions or action (Gordon et al., 1994; Regan-Kubinski, 1991; Tanner, 2006). This consistency across disciplines and theoretical frameworks in nursing is important to understand because researchers evaluating students' *Responding* using the LCJR may expect that it be related to the completion of an action.

For example, a student with exemplary *Responding*, as measured by the LCJR, would be expected to not only select an indicated action, but also complete it based on the fact that the rubric was developed from the conceptualizations of Tanner's (2006) Clinical Judgment Model. Specifically, *Responding* encompasses "an appropriate course of action" and "attending to patients' responses to the nursing action while in the process of acting" (p. 208). The presence of a very weak relationship and a lack of statistical significance in this study however, does not support that *Responding,* as measured by the LCJR, is related to the completion of an indicated action. Similar to the results in the first research question, the data obtained in this portion of the study demonstrate that even though students on average, received *accomplished* to *exemplary Responding* scores, students also largely received NAF scores of zero. In fact, of the 92 participants observed, only ten completed the indicated nursing action despite receiving on average, *accomplished Responding* scores on the LCJR. As a result, it is important for nursing faculty and researchers to be aware that in the absence of a statistically significant relationship between *Responding* and the completion of an indicated nursing action, when using the

LCJR as a means for assigning meaning to students' actions, inaccurate conclusions may be drawn.

This study contributes to the understanding of clinical judgment in nursing by investigating a previously unexamined area of interest. Although researchers have described the construct validity of the LCJR as "good to very good," using multiple instruments would help to achieve the most comprehensive evaluation of each individual dimension of clinical judgment (Gubrud-Howe & Sideras, 2011; Victor-Chmil & Larew, 2013, p. 5). This suggestion by Gubrud-Howe and Sideras (2011) is important as this study demonstrated that *Responding* scores were in fact, not related to the completion of an indicated action despite this dimension consisting largely of the actions a nurse completes in the Clinical Judgment Model (Tanner, 2006). As a result, nursing faculty and researchers using the LCJR to draw conclusions surrounding students' actions might consider using multiple instruments or modifying the LCJR to include indicated action completion.

Additional Analyses

Additional analyses of the data were also conducted to identify if participants' individual dimension scores from *Noticing, Interpreting,* and *Reflecting* were related to the completion of an indicated nursing action. The theoretical foundations of Tanner's Clinical Judgment Model (2006) and other clinical judgment theories in nursing, indicate that nurses' *Noticing, Interpreting* and *Responding* are closely related in the way in which nurses respond to a situation in the form of a completed action using the cues that are noticed and

then interpreted (Gordon et al., 1994; Regan-Kubinski, 1991). However, using Spearman's rank order inter-correlation, the findings of this research study indicate weak to very weak relationships and no statistical significance between the *Noticing, Interpreting,* and *Reflecting* dimensions on the LCJR and the completion of an indicated nursing action. Based on the theoretical foundations of clinical judgment, it would be expected that some relationship would exist between *Noticing, Interpreting,* and *Reflecting* and the completion of an indicated nursing action (Gordon et al., 1994; Regan-Kubinski, 1991; Tanner, 2006). The findings of this study however do not support that assumption.

Limitations

This study had a number of limitations. First, the simulation design itself was uncontrolled. Given that this study was observational in nature, the researcher did not develop the observed simulations. Also, the researcher and five additional expert nursing faculty initially chose an indicated action to embed in each simulation but some were adjusted or changed all together based on the faculty preference at the participating school of nursing after the study had been initiated. Therefore, the researcher was unable to completely control the variable of indicated nursing actions as consistently as originally designed. Although some of the original nursing actions were changed or adjusted based on faculty request, the actions observed in this study remained consistent with patient safety and quality issues. Furthermore, this change did not skew the findings in a positive manner but instead demonstrated consistent results with the remaining unchanged indication actions. Prior researchers using the LCJR for evaluating

clinical judgment controlled the environment in which students were scored (Ashcraft et al., 2013; Blum et al., 2010; Bussard, 2015; Dillard et al., 2009; Fenske et al., 2013; Johnson et al., 2012; Kantar & Alexander, 2012; Lasater et al., 2014; Lasater & Neilsen, 2009; Mariani et al., 2013; Schlairet & Fenster, 2012; Shin et al., 2014; Victor-Chmil et al., 2015; Yuan et al., 2014). Thus, although it is likely that the simulation design itself was a confounding variable, it is unclear how or to what extent the changed actions may have affected results especially given the lack of research reporting the same concern.

Other limitations may have also impacted the study findings such as the utilization of only one rater. As a result of this, unintended rater bias was possible. The original study design included several raters however securing them proved impossible given the time commitment of the study. Having additional observers score students and then establish inter-rater reliability and consistency would add rigor to the data collection and may have impacted the findings (Tabachnick & Fidell, 2013).

The high fidelity simulation environment itself could have been another limitation of this study. Engaging students in high fidelity simulation instills a realistic patient environment into an artificial one in order to prepare for real-life situations (Lopreiato et al., 2016). Despite all attempts at fidelity, it is unclear if students' behavior in this study would remain consistent in an actual clinical situation. Testing clinical judgment in an actual clinical setting versus high fidelity simulation may have yielded different findings.

The information that was provided to students prior to each simulation scenario in the didactic learning of the course may also have been a limitation of this study. For instance, expectations that the course faculty relayed to participants in this study may have affected the actual actions that were completed. Given that the researcher in this study was only present during one preceding didactic instruction, it is difficult to know what instructions faculty provided to students before to each simulation scenario commenced although every attempt was made to control this.

Furthermore, the non-randomized selection of participants was also a limitation of this study. The researcher selected participants on the basis of purposive sampling from pre-determined clinical groups within the course, thus increasing the vulnerability for selection bias. While this is common in clinical research in nursing education, it is possible that unaccounted and uncontrolled differences existed among participants in this study, which impacted the findings.

Implications for Practice

Clinical judgment has recently come to the forefront of nursing education and research following its inclusion as an essential of baccalaureate education (AACN, 2008). This recognition is based on the premise that clinical judgment is necessary for professional nursing practice and contributes to the provision of safe patient care (AACN, 2008; Johnson et al., 2012; Tanner, 2006). The findings of this study could impact the way in which nursing faculty assess, evaluate and appraise students' clinical judgment. This is important because it is

imperative that deficiencies in clinical judgment are detected so that further emphasis may be placed on areas where students are lacking. It is not enough for students to only think like a nurse. They must also act as one. When the LCJR is used, the scorer needs to be cognizant that the criteria for the *Responding* dimension may not reflect this. As a result, nursing faculty using total LCJR scores as an appraisal or evaluation of nursing students' indicated action completion in a simulated patient scenario may be misleading. Nursing faculty who consider using LCJR scores in this way should be mindful to also identify indicated nursing action and students' completion of them. Specifically, using the LCJR to evaluating students' indicated nursing action completion may not be accurate and could provide faculty with a misunderstanding of students' clinical judgment.

Recommendations for Further Research

The goal of this study was to evaluate the relationship between clinical judgment, as measured by the LCJR, and the completion of an indicated nursing action. Data were collected to test two research questions relating to this goal. The data were examined and statistically significant results were not reached. The findings of this study have identified future opportunities to transform clinical judgment research in nursing for continued work. Based on the limitations of this study, there are several recommendations for further research.

First, the nursing discipline could benefit from replication of this study but with design changes. For instance, this study exhibited a lack of control in choosing an indicated nursing action. Future replication of this study should

employ greater control of the examined indicated actions. While purposive sampling for recruiting the participants in this study, using probability sampling would help minimize sampling bias and achieve a more representative sample of the population. In addition, using multiple raters after extensive training and the establishment of inter-rater reliability would add rigor to the research going forward.

This study should also be repeated using multiple sites and a larger sample to generate a larger effect size and ensure that these results can be replicated. Future research studies should also consider using other ways to evaluate clinical judgment in addition to the LCJR. This could include the development of new clinical judgment instrumentation that measures all aspects of Tanner's (2006) Clinical Judgment Model.

Additional research in this area should also include investigating clinical judgment and completion of an indication action not only in the simulation setting but also in the clinical setting. Variations between the two may exist. Conducting a study in the clinical setting is feasible. This already occurs on a daily basis in the medical field in resident education. An attending physician supervises residents and when an action is not done it is the responsibility of the attending physician to ensure that the action is completed. This can be studied with nursing students as well. The researcher/rater would supervise a student in the clinical setting. If the action was not completed by the student, then the researcher could intervene and ensure the action is completed. By doing this the

student's lack of completion of the indication action would be documented while still maintaining patient safety.

Finally, future research should be conducted to reach a consensus in regards to action/s in various clinical scenarios. In doing so, evaluation of clinical judgment would be more consistent. In order to come to a consensus as to what action or actions are indicated an expert panel could be created. In fact, research can be conducted in order to find a clear consensus in regards to certain actions in clinical scenarios that are unanimously agreed upon. These agreed upon actions and scenarios can then specifically be studied in the clinical setting, the simulation setting, or both, in order to aid faculty in determining a student's clinical judgment. Doing this would add rigor to studies and virtually eliminate the question of if the researcher chose the "correct" indicated action to study.

Conclusions

The findings of this study expand the work of previous clinical judgment research. This investigation revealed that clinical judgment, as measured by the LCJR, was not statistically significantly related to the completion of an indicated nursing action. An assessment of the relationship between the dimension *Responding,* on the LCJR, and the completion of an indicated nursing action also did not reveal a statistically significant relationship.

Theoretical frameworks in nursing have consistently depicted nursing action as integral to clinical judgment (Gordon et al., 1994; Regan-Kubinski, 1991; Tanner, 2006). This researcher however, identified that when the LCJR, a

commonly used tool for measuring clinical judgment, was used it did not measure indicated nursing action completion. Furthermore, the data demonstrate that clinical judgment, as measured by the LCJR, was not related to the completion of an indicated nursing action. The findings of this study suggest a need for other methods of measuring clinical judgment that include action appraisal so that faculty and researchers can more readily ensure that students are ready for nursing practice.

Appendix A IRB Approval Letter

To: Kristina Dreifuerst
NURSING

Andrea Fedko
UNIVERSITY LEVEL

From:

Human Subjects Office
Office of Research Compliance – Indiana University

Date: January 05, 2016

RE: NOTICE OF EXEMPTION - NEW PROTOCOL

Protocol Title: Examining the Relationship Between Clinical Judgment and Nursing Action in Prelicensure Students

Study #: 1512202672

Funding Agency/Sponsor: None

Status: Exemption Granted **|** Exempt
Study Approval Date: January 05, 2016

The Indiana University Institutional Review Board (IRB) EXE000001 | Exempt recently reviewed the above-referenced protocol. In compliance with (as applicable) 45 CFR 46.109 (d) and IU Standard Operating Procedures (SOPs)

for Research Involving Human Subjects, this letter serves as written notification of the IRB's determination.

Under 45 CFR 46.101(b) and the SOPs, as applicable, the study is accepted as Exempt (1) Category 1: Educational Research Conducted in Educational Settings. Research conducted in established or commonly accepted educational settings, involving normal educational practices, such as: i) research on regular and special education instructional strategies, or ii) research on the effectiveness of, or the comparison among instructional techniques, curricula, or classroom management methods (2) Category 2: Surveys/Interviews/Standardized Educational Tests/Observation of Public Behavior Research involving the use of educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures or observation of public behavior if: i) information obtained is recorded in such a manner that human subjects cannot be identified, directly or through identifiers linked to the subjects; or ii) any disclosure of the human subjects responses outside the research would not reasonably place the subjects at risk of criminal or civil liability or be damaging to the subjects financial standing, employability or reputation, with the following determinations:

Acceptance of this study is based on your agreement to abide by the policies and procedures of the Indiana University Human Research Protection Program and does not replace any other approvals that may be required. Relevant policies and procedures governing Human Subjects Research can be found at: http://researchcompliance.iu.edu/hso/hs_guidance.html.

The Exempt determination is valid indefinitely. Substantive changes to approved exempt research must be requested and approved prior to their initiation. Investigators may request proposed changes by submitting an amendment through the KC IRB system. The changes are reviewed to ensure that they do not affect the exempt status of the research. Please check with the Human Subjects Office to determine if any additional review may be needed.

You should retain a copy of this letter and all associated approved study documents for your records. Please refer to the assigned study number and exact study title in future correspondence with our office. Additional information is available on our website at http://researchcompliance.iu.edu/hso/index.html.

If your source of funding changes, you must submit an amendment to update your study documents immediately.

If you have any questions or require further information, please contact the Human Subjects Office via email at irb@iu.edu or by phone at 317-274-8289 (Indianapolis) or 812-856-4242 (Bloomington).

You are invited, as part of ORA's ongoing program of quality improvement, to **participate in a short survey** to assess your experience and satisfaction with the IRB related to this approval. We estimate it will take you approximately **5 minutes to complete the survey.** The survey is housed on a Microsoft SharePoint secure site that requires CAS authentication. This survey is being administered by REEP; please contact us at reep@iu.edu if you have any questions or require additional information. Simply click on the link below, or copy and paste the entire URL into your browser to access the survey: https://www.sharepoint.iu.edu/sites/iu-ora/survey/Lists/Compliance/IRB_Survey/NewForm.aspx.

/enclosure

Appendix B Site Approval Letter

WINONA
STATE UNIVERSITY
College of Nursing and Health Sciences
Department

November 6, 2015

Andrea Stuedemann Fedko PhD(c), MSN, RN
PhD Student, Nursing Education
Indiana University
1111 Middle Drive
Indianapolis, IN 46202

Ms. Stuedemann:

Thank you for your request to conduct your dissertation research titled: *Examining the Relationship between Clinical Judgment and Nursing Action in Prelicensure Students*. I approve your request and thank you for considering Winona State as your data collections site.

Please coordinate your data collection with Dr. Catherine Nosek. Dr. Nosek can assist with the notification of the Winona State Institutional Review Board and with orientation of the nursing faculty regarding your research.

Best wishes for success as you move forward. Please contact my office if we can be of any assistance. I can be reached by e-mail at wmcbreen@winona.edu.

Sincerely,

William McBreen, Ph.D., R.N.
Dean, College of Nursing and Health Sciences
Winona State University

Appendix C SIS Students

Study Information Sheet-Students
IRB STUDY # 1512202672

INDIANA UNIVERSITY STUDY INFORMATION SHEET FOR STUDENTS (SIS-Students)

Examining the Relationship Between the Clinical Judgment Development and Nursing Actions

You are invited to participate in a research study examining outcomes from a simulation experience. You were selected as a possible subject because you are currently enrolled in a course that includes a simulation. We ask that you read this form and ask any questions you may have before agreeing to be in the study. This study will occur as a component of simulation that is already regularly assigned during the course you are enrolled in during Spring, 2016. This simulation is a part of your current requirements for this course and the study does not change that. While the simulation is a requirement, agreeing to the use of your information for the study is optional.

The study is being conducted by Andrea L. Fedko PhD(c), MSN, RN, (Co-Investigator), a doctoral candidate at Indiana University School of Nursing, under the supervision of Kristina Thomas Dreifuerst PhD, RN, CNE, ANEF (Principal Investigator), an Assistant Professor at Indiana University School of Nursing.

STUDY PURPOSE

The purpose of this study is to observe prelicensure nursing students' completion of different patient scenarios in simulated learning environments. It is important to understand the decisions and nursing actions students take as they learn to think like a nurse.

PROCEDURES FOR THE STUDY:
During the simulation and debriefing the following will occur:

- All students will participate in their customary assigned role(s) (ie: primary nurse, secondary nurse etc.) during simulation and take part in the usual debriefing method for the course.

- As part of the study, students will be scored by the study Co-Investigator and two additional research assistants during and immediately after the simulation and debriefing using an instrument that rates the development of clinical judgment (the Lasater Clinical Judgment Rubric), and a Nursing Action Form. These instruments will only be used for the study data, will not be shared with your faculty, and, therefore, will not impact your course grade.

- It is important that you understand that while your nursing faculty will be present to facilitate the simulation and debriefing sessions, they will not know if you are or are not participating in the study.

- Regardless of your choice to participate in the research study, you will play a part in the simulation in your customary student role and you will be wearing a name tag with your study number so your name will not be associated with any data. All students, regardless of your choice to participate or not, will wear a tag so that the nursing faculty is unaware of your participation status.

- After the simulation and debriefing in which you were assigned to a nursing role, all students will be invited to complete a demographic survey taking approximately 5 minutes. You will submit this demographic survey to the Co-Investigator as a part of the study data. Regardless of your participation status, all students will complete the demographic survey, but, those who choose not to participate will respond 'no' to each survey question. If you answer the questions on the demographic survey with anything other than no, you are agreeing to allow your scores on the LCJR and the NAS included in the study database.

- You have the choice to agree to study participation which means having your scoring data included in the database for this study or to decline study participation which means not having it in the database. In either case, you will still participate in the simulation and all activities associated with it while the study is in progress so no one will know who is participating and who is not.

- If you decline to participate in the study, your scoring data will not be included in the data set and any documentation associated with your simulation experience will be shredded.

Whether you agree or decline study participation you will be participating in the simulation and will be assigned a confidential participant number. Only the assigned numbers will be used to identify data for the study.

CONFIDENTIALITY

Student names will not be collected during this study. The identity of the school where the study takes place and the clinical faculty involved will be held in strict confidence in reports in which the study may be published and databases in which results may be stored. The Investigator and Co-Investigator will only be able to identify students by their unique participant number, and the simulation session in which they participated in. No identifying information will be used in the data analysis or reporting.

Organizations such as the study investigator and his/her research associates, the Indiana University Institutional Review Board or its designees, and (as allowed by law) state or federal agencies, specifically the Office for Human Research Protections (OHRP) may need to access the research records for quality assurance and data analysis
but they will not have access to your personal information (the signed SIS documents) since they will have been destroyed immediately following your participation in the simulation.

PAYMENT

You will not receive payment for taking part in this study. We greatly appreciate your willingness to participate in this study that we believe will make a contribution to understanding the clinical judgment and actions of nursing students.

BENEFITS OF TAKING PART IN THE STUDY
There is no direct benefit to you for participating in this study.

CONTACTS FOR QUESTIONS OR PROBLEMS

For questions about the study, contact the researcher Andrea S. Fedko PhD(c), MSN, RN at astuedem@umail.iu.edu or the Primary Investigator Kristina Thomas Dreifuerst PhD, RN, CNE, ANEF at ktdreifu@iu.edu.

For questions about your rights as a research participant or to discuss problems, complaints or concerns about a research study, or to obtain information, or offer input, contact the IU Human Subjects Office at (317) 278-3458 or [for Indianapolis] or (812) 856-4242 [for Bloomington] or (800) 696-2949.

VOLUNTARY NATURE OF STUDY

Taking part in this study is voluntary. You may choose not to take part or may leave the study at any time. Leaving the study will not result in any penalty. Your decision whether or not to participate in this study will not affect your current or future relations with Winona State University or Winona State University's nursing program.

Appendix D SIS Faculty

Faculty Information Sheet
IRB STUDY # 1512202672

INDIANA UNIVERSITY FACULTY INFORMATION SHEET

Examining the Relationship Between the Clinical Judgment Development and Nursing Actions

You are invited to participate in a research study examining outcomes from a simulation experience. You were selected as a possible faculty contributor because you are currently instructing students in a course that includes a simulation experience. We ask that you read this form and ask any questions you may have before agreeing to partake in the study. This study will occur as a component of simulations that are already regularly assigned in your course during Spring, 2016. These simulations are a part of your current requirements for this course and the study does not change that. While the simulation is a requirement for your course, your students will be asked to agree to participate in this study by allowing members of the research team to observe them in simulation and debriefing and having their experience assessed. You will not know which of your students have agreed to study participation or not as all students will be observed and assessed but only the data from students who agree will be utilized for the study. Data from students who do not agree to study participation will be destroyed.

The study is being conducted by Andrea L. Fedko PhD(c), MSN, RN, (Co-Investigator), a doctoral candidate at Indiana University School of Nursing, under the supervision of Kristina Thomas Dreifuerst PhD, RN, CNE, ANEF (Principal Investigator), an Assistant Professor at Indiana University School of Nursing.

STUDY PURPOSE

The purpose of this study is to investigate baccalaureate nursing students' clinical judgment and actions during a patient simulation. Clinical judgment means many different things to many different people, however in this study we are using the framework developed by Tanner where it is described as the "interpretation or conclusion about a patient's needs, concerns, or health problems, and/or the decision to take action (or not), use or modify standard approaches, or improvise new ones as deemed appropriate by the patient's response" (Tanner, 2006, p. 204).

PROCEDURES FOR THE STUDY:

During the simulation and debriefing the following will occur:

- All students will participate in their customary assigned role(s) (i.e.: primary nurse, secondary nurse etc.) during the simulation and take part in the usual debriefing method for the course. They will however receive a

study participant number to wear during the simulation for study identification purposes.

- As part of the study, students will be scored by the study Co-Investigator and two additional research assistants during and immediately after the simulation and debriefing using an instrument that rates the development of clinical judgment (the Lasater Clinical Judgment Rubric), and a Nursing Action Form. These instruments will only be used for the study data, will not be shared with you and, therefore, will not impact your assessment of students or how you assign course grades.

CONFIDENTIALITY
For the purposes of this study, student names will not be collected. The identity of the school where the study takes place and the clinical faculty involved will be held in strict confidence in reports in which the study may be published and databases in which results may be stored. The Investigator and Co-Investigator will only be able to identify students by their unique participant number, and the simulation session in which they participated. No identifying information will be used in the data analysis or reporting.

Organizations such as the study investigator and his/her research associates, the Indiana University Institutional Review Board or its designees, and (as allowed by law) state or federal agencies, specifically the Office for Human Research Protections (OHRP) may need to access the research records for quality assurance and data analysis
but they will not have access to your personal information since they will have been destroyed immediately following your participation in the simulation.

PAYMENT

You will not receive payment for taking part in this study. We greatly appreciate your willingness to participate in this study that we believe will make a contribution to the understanding of the clinical judgment and actions of nursing students.

BENEFITS OF TAKING PART IN THE STUDY
There is no direct benefit to you or your students for participating in this study.

CONTACTS FOR QUESTIONS OR PROBLEMS

For questions about the study, contact the Co-Investigator Andrea S. Fedko PhD(c), MSN, RN at astuedem@umail.iu.edu or the Primary Investigator Kristina Thomas Dreifuerst PhD, RN, CNE, ANEF at ktdreifu@iu.edu.

For questions about your rights as a research participant or to discuss problems, complaints or concerns about a research study, or to obtain information, or offer input, contact the IU Human Subjects Office at (317) 278-3458 or [for Indianapolis] or (812) 856-4242 [for Bloomington] or (800) 696-2949.

Appendix E Basic Nursing Action Form and Clinical Judgment Score Sheet

Basic Nursing Action Form

Was the following action completed?		
Indicated Nursing Action	**Yes**	**No**

Clinical Judgment Score Sheet

	Score
Noticing	
Interpreting	
Responding	
Reflecting	
Total Combined Score:	

Appendix F Original Nursing Action Form One

Were the following actions completed?		
	Yes	**No**
Introduce Self		
Assessment of Patient		
Obtain vital signs		
Reports findings to medical doctor		
Calls for laboratory results		
Interprets laboratory results		
Reassesses patient		
Reassesses vital signs		
Assesses intake/output		
Reports findings to physician		
Ensures patient safety		

Appendix G Original Nursing Action Form Two

Were the following actions completed?	Yes	No
Completes initial assessment, evaluates data collected and documents		
Initiates monitoring and interprets		
Discusses how lab work is collected		
Positions patient to assist ventilation		
Implements nursing measures to decrease patient anxiety		
Reports findings to ED medical doctor		
Must call RT to administer Albuterol		
Must call lab for results		
Anticipates and monitors SE of Albuterol		
Reassesses, interprets findings, and documents		
Requests & interprets lab results		
Requests & interprets ABG results		
Requests & interprets X-ray result		
Assesses on arrival to unit, interprets findings and documents		
Calls MD and reports findings using SBAR		
Seeks order to decrease IV fluids when MD does not order		
New orders, Foley catheter and IV Lasix		
RN inserts urinary catheter using sterile technique		
Correctly administers furosemide		
Reassesses, interprets findings, and documents		
Anticipates and prepares for admission to hospital		
Reports findings to healthcare provider		
Reassesses, interprets findings, documents		
Seeks order to decrease rate of IV fluid administration		
Anticipates and prepares for emergency intervention intubation and ventilator		
Reports findings to MD		
Reassesses, interprets findings, documents		
Stays with patient		
Calls for immediate help from team		
Anticipates and prepares for emergency intervention		
Begins (or delegates) manual breaths for patient		
Assists with intubation		
Assesses endotracheal tube placement with 5 point auscultation		
Obtains stat chest x-ray		

Appendix H Original Nursing Action Form Three

Were the following actions completed?	Yes	No
Completes initial assessment, evaluates data collected and documents		
Positions patient in high Fowler's position		
Identifies patient appropriately by checking name bad		
Checks allergies		
Verifies physician's orders		
Gathers appropriate supplies for chest tube insertion		
Explains procedure for chest tube insertion to patient		
Ensures consent is signed prior to procedure		
Prepares patient by placing on right side		
Administers morphine sulfate IV push		
Sets up water seal system		
Fills water seal to 2cm line		
Fills suction control to physician specified amount		
Safely connects water seal system to chest tube drain		
Proper placement of tubing		
Connects chest tube to closed chest tube drainage system		
Covers chest tube insertion site with occlusive dressing		
Connects chest tube drainage system to wall suction		
Tapes all connection points to the drainage system		
Turns on wall suction		
Assesses function of closed chest tube drainage system		
Auscultates lung fields		
Reassesses and interprets vitals and oxygen saturation		
Obtains order for post insertion x-ray		
Provides bed position that is comfortable to patient		
Documents size, location, color/drainage, patient response		
Calls for lab results		
Positions in high fowlers		
Verifies orders		
Places IV pump at correct rate		
Assessments, especially pulmonary		
Completes assessment, interprets findings, documents		
Assesses function of CT drainages system		
Identifies cause of respiratory compromise		

Appendix I Site One Acute Coronary Syndrome

Nursing Action Form, Section One

Was the following action completed?		
Indicated Nursing Action	**Yes**	**No**
Validate Heparin bolus with a second nurse		

Appendix J Site One Acute Coronary Syndrome

Nursing Action Form, Section Two

Was the following action completed?		
Indicated Nursing Action	**Yes**	**No**
Administer intravenous push Atropine		

Appendix K Site One Chest Tube/Trauma Nursing Action Form, Section One

Was the following action completed?		
Indicated Nursing Action	**Yes**	**No**
Apply non-petrolatum occlusive dressing to chest tube site		

Appendix L Site One Chest Tube/Trauma Nursing Action Form, Section Two

Was the following action completed?		
Indicated Nursing Action	**Yes**	**No**
Place hemostat, spare dressings, and sterile water at bedside		

Appendix M Site One Chronic Obstructive Pulmonary Disease

Nursing Action Form

Was the following action completed?		
Indicated Nursing Action	**Yes**	**No**
Decrease Intravenous Fluid		

Appendix N Site One Gastrointestinal Bleed Nursing Action Form, Section One

Was the following action completed?		
Indicated Nursing Action	**Yes**	**No**
Retrieve new intravenous fluid		

Appendix O Site One Gastrointestinal Bleed Nursing Action Form, Section Two

Was the following action completed?		
Indicated Nursing Action	**Yes**	**No**
Clarify duplicate Pantoprazole order with medical doctor		

Appendix P Site One Diabetic Ketoacidosis Nursing Action Form

Was the following action completed?		
Indicated Nursing Action	**Yes**	**No**
Validate intravenous Insulin dose with second nurse		

Appendix Q Site Two Acute Coronary Syndrome

Nursing Action Form, Section One

Was the following action completed?		
Indicated Nursing Action	**Yes**	**No**
Retrieve new intravenous fluid		

Appendix R Site Two Acute Coronary Syndrome

Nursing Action Form, Section Two

Was the following action completed?		
Indicated Nursing Action	**Yes**	**No**
Retrieve an adult sized nasal cannula		

Appendix S Site Two Chronic Obstructive Pulmonary Disease

Nursing Action Form, Section One

Was the following action completed?		
Indicated Nursing Action	**Yes**	**No**
Secure peripheral intravenous line		

Appendix T Site Two Chronic Obstructive Pulmonary Disease

Nursing Action Form, Section Two

Was the following action completed?		
Indicated Nursing Action	**Yes**	**No**
Place urinary catheter on a non-movable part of bedframe		

Appendix U Site Two Cerebrovascular Accident Nursing Action Form

Was the following action completed?		
Indicated Nursing Action	**Yes**	**No**
Raise bed side-rails		

Appendix V Site Two Sepsis Nursing Action Form

Was the following action completed?		
Indicated Nursing Action	**Yes**	**No**
Verify patient code status		

Appendix W Demographic Survey

Instructions: Please fill out the following survey if you agree to have your data be a part of this study. If you do **not** agree to have your data be a part of this study, please write 'no' at each survey question.

Examining the Relationship Between Clinical Judgment and Nursing Action in Prelicensure Students

1. What is your gender?

- ◯ Female
- ◯ Male

2. What is your age?

- ◯ 18 to 24
- ◯ 25 to 34
- ◯ 35 to 44
- ◯ 45 to 54
- ◯ 55 to 64
- ◯ 65 to 74
- ◯ 75 or older

3. Which race/ethnicity best describes you? (Please choose only one.)

- ◯ American Indian or Alaskan Native
- ◯ Asian / Pacific Islander
- ◯ Black or African American
- ◯ Hispanic
- ◯ White / Caucasian
- ◯ Multiple ethnicity / Other (please specify)

4. Will your nursing degree (BSN) be your first degree?

- ◯ Yes
- ◯ No

1

5. If you answered 'no' to question 4: What other degree(s) do you hold?

6. Which of the following have you had previous healthcare experience in?

- ◯ Nurse Assistant
- ◯ Nurse Intern/Extern
- ◯ Medical Secretary
- ◯ Scribe
- ◯ Technician
- ◯ Other

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Curriculum Vitae

Andrea Lauren Fedko

EDUCATION:

DOCTORAL	Degree	Date Awarded
Indiana University	PhD	11/2016
GRADUATE		
Winona State University	MSN	05/2013
UNDERGRADUATE		
Winona State University	BSN	05/2010

APPOINTMENTS:

ACADEMIC	Credential	Dates
Rush University Chicago, IL	Adjunct Clinical Faculty	01/2014-current
Indiana University	Research Assistant	2013-2014
NON-ACADEMIC		
Mayo Clinic Rochester, MN	Registered Nurse	07/2010-05/2013
Mayo Clinic Rochester, MN	Summer III Nurse Intern	06/2009-08/2009
MSTAFF	Home Health Aid/Certified Nurse Assistant	06/2008-05/2010

PROFESSIONAL ORGANIZATION:

STTI – Kappa Mu Chapter	Member 2013-Present

CERTIFICATIONS:

BLS Provider	08/2014-08/2016
ACLS Provider	08/2014-08/2016

EXTRACURRICULAR ACTIVITIES:

Winona State University NCAA Softball Player	2006-2010

PROFESSIONAL HONORS AND AWARDS:

Name	Granted By	Date Awarded
NLN Jonas Scholar	NLN Jonas Scholar Foundation	08/2015
Golden Key International Honor Society	IUPUI	03/2016

TEACHING:

UNDERGRADUATE	Title	Format	Role	Term	Students
Course # N446	High Acuity Nursing	Lecture, Clinic, Lab	Guest Lecturer	Spring 2013	50

*Guest lecturer on cirrhosis, hepatic failure, liver transplantation, and acute pancreatitis

GRADUATE	Title	Format	Role	Term	Students
Course #501	Role of the Professional Nurse	Lecture, lab, clinic	Adjunct Clinical Faculty	Spring 2014, Fall 2014	50

*Guest lecturer 10/8/2014 on Sensation and Perception
*Lab facilitator
*Clinical faculty

Course #625	Advanced Health Assessment Across the Lifespan	Online, lab	Adjunct Clinical Faculty	Summer 2015	93

*Neurovascular Lecturer
*Lab facilitator

RESEARCH/CREATIVE ACTIVITIES:

DISSERTATION RESEARCH

Title	Status
Examining the Relationship Between Clinical Judgment and Nursing Action in Prelicensure Students	Pilot Study Completed Spring 2015 Large-Scale Study Completed Spring 2016

AWARDED GRANTS/FELLOWSHIPS

Title	Granting Agency	Award Amount	Inclusive Dates
NLN-Jonas Scholar	National League for Nursing	$6,000.00	08/2015-08/2016
STTI Kappa Mu Annual Research Grant	STTI Kappa Mu Chapter	$500.00	03/2016-05/2016

SERVICE:

PROFESSIONAL SERVICE

LOCAL

Organization	Activity	Inclusive Dates
Mayo Clinic	Chair – Surgical Nursing Practice Committee	2011-2013
Mayo Clinic	Unit Congress Member	2011-2013

UNIVERSITY SERVICE

SCHOOL

Activity	Role	Inclusive Dates
Rush University Nursing Candidate Interviews	Interviewer	2/13/2015

CAMPUS

Student Athlete Advisory Committee	Member	08/2007-05/2010

PUBLICATIONS:

1. Dreifuerst, K.,T., McNelis, A.,M., Weaver, M.T., Broome, M.,E., Druacker, C.,B., & **Fedko, A.,S.** (2016). Exploring the pursuit of doctoral education by nurses seeking or intending to stay in faculty roles. *Journal of Professional Nursing,* 32 (2), doi:10.1016/j.profnurs.2016.01.014.

2. **Fedko, A.S.** & Dreifuerst, K.T. (Accepted – anticipated publication date January, 2017). Examining the relationship between clinical judgment and nursing actions in prelicensure students. *Nurse Educator*.